

Reference Manual :Performer

T H E M I D I S E Q U E N C E R S O F T W A R E

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Chapter 1 *About Performer*



Mail in the Registration Card

Performer is a powerful MIDI sequencer designed for the music professional. It provides a comprehensive MIDI recording, playback, and editing environment for a large variety of applications. Its speed, accuracy and flexibility make it the sequencer of choice for working musicians the world over.

Take a moment now to fill in and mail the registration card found at the very beginning of this manual. Doing so entitles you to:

- A free backup master disk
- Free, unlimited technical support
- Free newsletters and software updates
- Announcements about major software upgrades and new products

Leave the rest of the cardboard page in the manual for your future reference. Since Mark of the Unicorn can provide customer service only to registered users, please be sure to send the card in immediately after purchase.

To use Performer, you must have a Macintosh computer, a MIDI interface and a MIDI instrument (most probably a synthesizer). This is the minimal setup you will need, although Performer can support any configuration of MIDI instruments, including NuBus devices such as the MacProteus™, SampleCell™, and SampleCell II™. Performer works well with all MIDI instruments and is capable of handling the most complex MIDI situations. It is compatible with any MIDI-equipped device, such as synthesizers, drum machines, hardware sequencers, synchronization devices and more.

A MIDI sequencer is like a cross between a tape recorder and a player piano: the physical actions you make when playing the keyboard or other MIDI controller instruments are stored not as audio signals (as your tape machine would record) but as numerical

information that represents music (pitches, attacks, releases, pitch bends and more). The nuances in your musical performance are analyzed and its components encoded and stored. When played back, the synthesizer recreates your original performance. In this way, the recorded sequence is more like a player piano roll, telling the instrument exactly how to play itself. One nice thing about MIDI is that you can use any compatible instrument for playback. You can also edit the individual elements of your sequence, such as a single bad note in an otherwise flawless performance. MIDI sequencing provides you with a way to manipulate virtually any parameter of a musical performance.

Performer is loaded with features, structured in a layered fashion such that you can use the ones you want and not worry about the others. This is helpful for those of you who are new to the program, as well as experienced users who need functional power without unnecessary complexity. The rest of this chapter provides a brief description of some of Performer's salient features.

The basic recording and playback functions are very straightforward, modeled after tape deck functions. They are located in Performer's main control panel:



Music recorded with Performer is played back exactly as entered: the resolution of 480 ticks per quarter note assures accuracy. As many tracks as you need for recording and playback are available to you. Several tracks can be recorded onto simultaneously from multiple MIDI channels. Both the modem and printer ports can be used simultaneously for input and output of data as well as timing information. Performer's Patch Thru utility allows you to either echo incoming data directly or channelize it. Any track can be assigned to play back from one or more of sixteen channels on either port, giving you 32 separate channels for playback. If you have a multi-port interface

such as the MIDI Time Piece II or MIDI Express, Performer provides as many channels as the interface allows (128 or 96, respectively). Since many of Performer's operations can be done while the sequence is playing back or recording, you don't have to stop the music to get things done.

A flexible step-recording mode precisely enters passages too fast or complex to be recorded in real time, plus there are several auto-locator features such as punch-in/out and auto stop/rewind to make real-time recording easier.

Once you've recorded, there is a great deal of editing power at your fingertips — you can change anything in your sequence, from a single event to a whole region of data. Single events or entire regions of data can be edited or inserted anywhere in the sequence. The basic cut and paste operations and the region editing commands allow you to edit and *create* data: you can transpose whole sections, change controller values smoothly, create new pitch bend data, control velocity to create dynamic effects, create echo effects and more, each in only a few steps. State-of-the-art quantizing features such as Humanize and Groove Quantize help you perfect the rhythmic nuance in your sequences.

To access the data that makes up your sequence, Performer offers three powerful event-editing environments on top of standard Event List window editing: the Graphic Editing window, the Notation Editing window, and the QuickScribe Notation window. All windows support single-event and region editing as described above, and every track in your sequence can be viewed and edited in either window at any time.

The *Graphic Editing* window plots the elements of your sequence on a scrolling, piano-roll graph that makes melodies, chords, dynamics and tempo changes easy to recognize and adjust. As in the Event List window, you can choose from measure, real, or SMPTE time display, and edit any visible event from your Macintosh or MIDI controller. Unlike the Event List, however, to edit events or groups of events you simply drag them to a new location in time, pitch (or controller value), or both. You can even create continuous data by drawing the desired curve on screen.

The *QuickScribe* Notation Editing window displays as many tracks as you want together in one window, formatted on a page exactly as it will print. The notation can be edited with all of Performer's powerful editing commands. You can drag notes vertically and horizontally to change pitch, location and duration. You can also step-enter notes directly in the notation window.

Performer has extensive synchronization capabilities, including Tap tempo. This type of sync allows you not only to control the tempo of an existing sequence as it plays back, but to create a tempo map in real time *before, during, or after recording* — all by simply tapping the tempo on your MIDI controller. For example, you can tap along to a prerecorded acoustic performance, creating a precise tempo map complete with accelerandos, ritards, and rubato passages, then sync your Performer sequence to the recording. Once you've got a tempo map, the powerful Scale Tempos command provides you with every conceivable way of tweaking your tempo map, including scaling tempos to fit time.

Since its inception, Performer has supported standard MIDI clock signals, allowing you to sync to FSK or SMPTE time code. SMPTE locations can be referenced and displayed directly on screen, and lockup is simple and clean. Performer can serve as an intelligent master or slave because it sends and receives Song Position Pointer. Coupled with its flexible tempo features, Performer's synchronization capabilities make it the sequencer of choice for musicians working in the film/video medium.

Performer has expanded the art of sequencing with powerful Chunking™ and cueing functions. The Chunks window introduces a whole new type of sequence: the song. Songs allows you to create simple or complex arrangements of multiple Chunks (sequences and other songs). Chunks can be graphically arranged in any order, vertically and horizontally to quickly build entire songs with other sequences and songs.

Sequences and songs can be automatically chained, cued up, or skipped to in real time using the Chain Chunks, Cue Chunks, and Skip buttons. These convenient controls come in handy—especially during live performance, where you need quick response and complete flexibility in choosing the next song.

To further enhance Performer's Chunking capabilities, the Remote Controls window allows you to trigger any Performer transport function or song select procedure, such as play, pause, stop, etc., from your MIDI controller. Now you can control Performer from your MIDI instrument—without ever going near your Macintosh!

Performer's Create Console feature instantly produces a mixing console customized for the track layout in your Tracks window. Use knobs and faders to automate your entire mix, including volume and panning. Best of all, Performer's consoles can be completely customized to fit your sequencing needs. You can build a console from scratch, adding buttons, knobs, sliders, LCD readouts, and more. And you can program them to generate any type of MIDI data, including sysex. Other professional mixing console features include flexible grouped and master controls, as well as adjustable fader null points.

Performer offers sophisticated rhythmic correction (quantizing) features. It is possible to vary the degree of effectiveness of quantization, allowing you to preserve the "free" quality of your performance while putting the critical notes on the beat. In addition, special metric effects such as beat shifting and doubling attacks can be done. The powerful Humanize command can produce more human feel in a part that may have been over-quantized. In fact, most of Performer's powerful editing commands provide humanization options that can loosen up the feel just right.

Performer takes full advantage of Mark of the Unicorn's MIDI operating system, FreeMIDI. FreeMIDI provides an intuitive, convenient, and consistent way for you to interact with the hardware in your MIDI studio. Together, Performer and FreeMIDI provide you with many benefits, such as intuitive pop-up menus for device selection, and the ability to select patches on your synths by name from within Performer, as well as other FreeMIDI-compatible applications. Perhaps the most important benefit is sound management: FreeMIDI provides built-in librarian support for many popular synths. FreeMIDI's PatchList Manager™ program can get a bulk dump and automatically display the patch names that are currently available in the synth. The patch names appear as a convenient pop-up menu directly in Performer, and it all happens automatically.

For more powerful sound management, Performer provides full integration with Mark of the Unicorn's new, state-of-the-art universal editor and librarian software, Unisyn™. Performer can play back in the background when you switch into Unisyn to select sounds, edit a patch, etc. Also, Unisyn automatically provides up-to-date patch lists for FreeMIDI, so that patch names in Performer are always accurate.

Performer also provides convenient printing capabilities for both list windows and music notation. The Print command prints the contents of Performer's list windows, such as the Tracks List, Markers window, and Event Lists. The QuickScribe notation window displays any combination of tracks as music notation on screen exactly as it will print out. Select any region to display, from a single measure to an entire piece. QuickScribe is ideal for lead sheets, instrument parts, or scores, which can be printed on any Macintosh-compatible printer.

If you want to transfer your sequence to a dedicated notation program, such as Mark of the Unicorn's Mosaic® software, simply save your work as a standard MIDI file. The process transferring is simple and fast.

Performer can be customized to fit your needs more than ever before. In the Tracks window, each track has a bar-graph style meter that indicates MIDI activity during playback and recording. Configure the meters to display either data density or note velocities. You can drag tracks window columns left or right to place them in any order you wish. Double-click (or option-click) the column headings to show/hide any column. Even basic features like soloing can be customized to fit your exact needs. For example, Partial Solo mode brings muted tracks down part way instead of total muting them, so you can focus on a certain musical element while still referencing others.

Version 5, as with its predecessors, is filled with our obsessive attention to detail. You'll enjoy features like pop-up menus in title bars to quickly switch tracks, a customizable Tracks window, a scrolling highlight in tracks overview to indicate the current playback location, double-clicking in any time ruler to auto-locate, and more.

We hope you enjoy using Performer's state-of-the-art sequencing environment!

About this manual

This manual provides a complete explanation for all of Performer's features. For an introduction to Performer, refer to the *Getting Started* booklet that accompanies this manual.

Each section of this reference manual contains a step-by-step procedural description and an in-depth explanation of each aspect of Performer's operation. Each feature description is self-contained, enabling you to learn about Performer one piece at a time, at your own rate.

We strongly recommend that you read the section on Performer's user interface thoroughly. The standard Macintosh user interface is extended in Performer to provide a more streamlined and functional working environment. This knowledge is essential when working with Performer: otherwise you may overlook some of the program's features.

Because Performer has extensive synchronization abilities, we've marked those sections pertaining to the film and video mediums with a film icon.



Chapter 2 *On-Line Help*

About the Performer Help file



Performer™ Help

Using the Help cursor



Performer's On-Line Help provides you with brief, on-screen explanations of each feature in the program. You can get help on any item in Performer, including menu items, greyed out (unavailable) menu items, mini-menus, windows, and buttons simply by clicking the item with Performer's Help cursor.

The Help information in Performer is stored separately in a special file called the *Performer Help* file. This file is automatically installed in the same folder as Performer, and no further preparation is necessary on your part.

- The Performer Help file must be present on your hard disk in order for you to be able to get help when running Performer. If it is not present for some reason, you can run the installer on the Performer master disk to make a copy of it on your hard disk.

When you are running Performer, you can get help on anything on Performer's screen with the Help cursor. To turn the arrow cursor into Performer's Help cursor, hold down the *command*, *option*, and *shift* keys together. When you release the keys, the cursor will turn back into an arrow.



To get help on something, just click it with the Help cursor. If it's a menu item, select it from the menu with the Help cursor. When you release the mouse button, a help window will appear that briefly explains the item.

To make the help window disappear, click anywhere.

What should you click on to get help?

Getting help on menu commands and dialog boxes

Loading the Help file

All major features in Performer have a help item. Some specific items do not and are explained within the description of a corresponding feature. If you can't get help on something, consult the index in this manual.

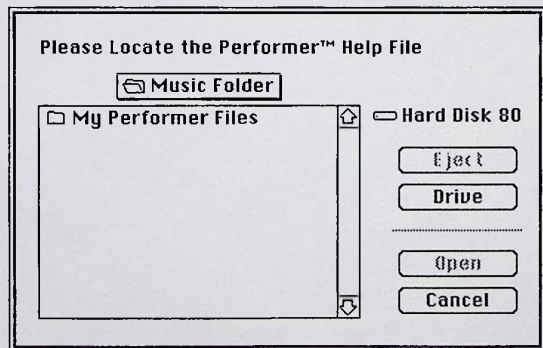
In general, click directly on the item you wish to get help on. For things like buttons, pop-up menus, and text boxes, click directly on the button itself rather than its label or associated text. If you don't get a help window the first time, try a few more times, as you might miss the "hot spot" the first time.

- ☛ The basic rule of thumb is: click all over the place with the help balloon cursor. You are bound to get a useful help balloon eventually, and it doesn't hurt to click as many times as you are inclined to.

For mini-menus in windows, click anywhere in the title bar of the window.

For general information about menu commands, choose the command from the menu with the help cursor. For specific information about the menu command, choose it with the arrow cursor first to open its dialog box, and then click specific buttons, text boxes, pop-up menus, and other items in the dialog box with the help balloon cursor.

If you click with the Help cursor, you may get the dialog box shown below:



This means that the Performer Help file is not in the same folder as Performer, and Performer is asking you to locate and open the Help File. To do so:

1. **Press the directory pop-up menu to open the folder that you installed the Help file in.**

The directory pop-up menu is the button labelled "Music Folder" in the picture above. The window below shows the contents of the Folder listed on that button. Select the bottom item in the menu to work your way back to the top level of your hard disk. If you are working with floppy disks, click the Drive button to look on another disk.

2. **If you can't find the Help file or have not installed it yet, click Cancel, Quit Performer, and follow the procedure above for installing the Help File.**
3. **If you can find the Help file, click its name in the list to highlight the name and click the Open button.**

Performer will remember the location of the Help file so that you won't have to find it each time you click the Help cursor. However, in some cases Performer may forget the location, so we recommend that you place the Help file icon in the same Folder as Performer so that Performer can always find it.

The Help menu

The Help menu contains two items: *About Help* and *Show Balloons*.

Choosing *About Help* opens a help window that describes how to use the On-line Help feature. You can choose About Help anytime—even when the Help file or a Performer file is not currently open.

Choosing *Show Balloons* makes the arrow cursor turn into the Help cursor without holding down any keys. This is convenient when you would like to browse several features. In Show Balloons mode, any item that you click on or select from a menu will open a help window.

In Show Balloons mode, you can temporarily turn the cursor back into the arrow by holding down the *command-option-shift* key combination.

Getting help on greyed menu items

To permanently turn the cursor back into the arrow, choose *Hide Balloons* from the Help menu.

To toggle the Show/Hide Balloons command from the Macintosh extended keyboard, press the Help key.

Greyed menu items are commands that are not currently available for one reason or another. For example, Region menu items are greyed unless a region has been selected. If a region is selected, they become black.

To get help on a greyed menu item, simply hold down the command-option-shift key combination while selecting the item from the menu. The item will not highlight as you select it, but a help window will appear anyway.

Please note that it is not possible to get help on greyed menu items when you are running Performer on a Macintosh with a 68000-based CPU such as the Macintosh Plus, SE or Classic.

A word to the wise

Help descriptions do not take the place of the Performer manual. Unfortunately, there is not enough space to cover all the intricacies of every Performer feature in the space of a Help window. *Therefore, we strongly recommend that you refer to your Performer manual and update documentation for a complete explanation of features that you would like to learn more about.* Then you won't miss things that the Help window doesn't cover, and you will get the most out of Performer.

Chapter 3 *Performer's User Interface*

The user interface encompasses everything that you do to interact with the program: what you see on the screen and how you use the mouse, keyboard and peripheral devices. In this section you'll find information about Performer's windows, dialog boxes, mouse and keyboard actions and how to specify and locate regions using units of time. This section also describes Performer's enhancements to the standard Macintosh user interface.

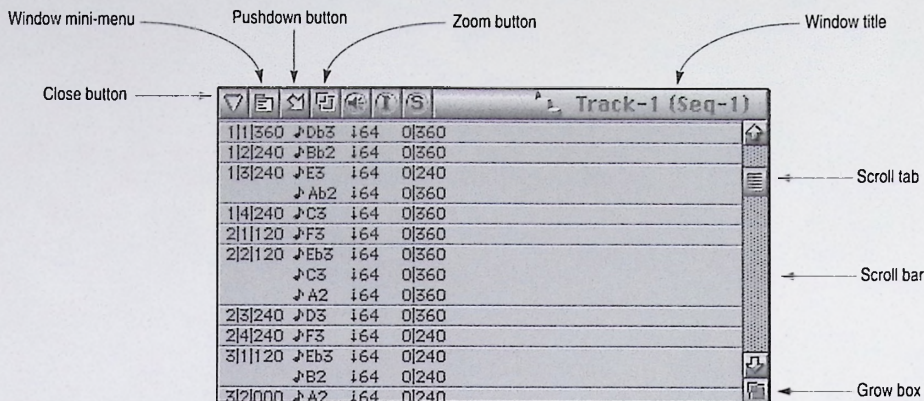
- ☛ The examples of Performer's windows that you see in this manual are what you see when you are running Performer on a Macintosh with a color monitor (in either 16-level greyscale or 256-colors). If you have a black and white monitor, what appears on your screen will be somewhat different than what you see printed in this book.

Before using Performer, please review the standard Macintosh user interface conventions. If any of them seem unfamiliar, please refer to the Macintosh owner's manual for a full explanation. Be sure you are familiar with the following:

- How to use the mouse and keyboard
- How to open, copy and delete files from the Finder
- How to choose commands from menus
- How to select options using push buttons, radio buttons and check boxes
- How to respond to dialog boxes
- How to use Command key shortcuts for menu commands
- How to enter and edit text

Windows

To start with, here's an example of a Performer window:

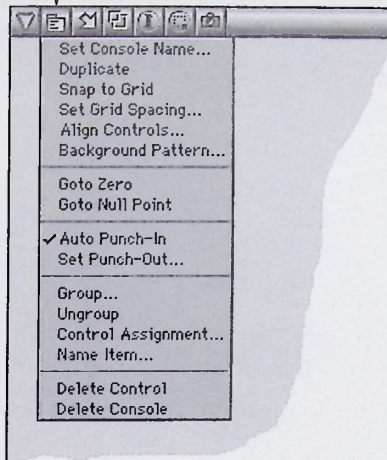


The Close button is shaped differently from the standard one but works just the same: click in it to close the window.

The Scroll Bar works exactly the same as the standard one: to move directly to a desired location in the window, drag the Scroll tab to the desired location. Press on the arrows to scroll continuously, or click once on them to scroll one line at a time; click in the grey region to scroll a screenful at a time.

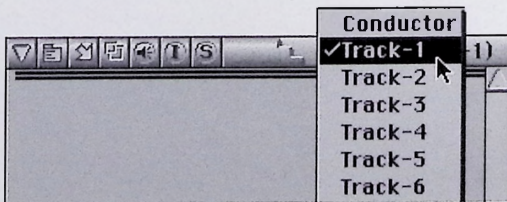
The Window Mini-Menu resembles the standard menus on the top of the screen. It contains commands pertinent to that particular window. To pull it down, press on the menu icon and then select a menu option as you would on a standard menu at the top of the screen.

Mini-menu button



A Performer mini-menu

Window title shows the name of the window, and often the track or sequence that it pertains to. Command-click the title to switch to a different track, sequence, etc.



Command-click the window title to switch to a different track or sequence.

The Pushdown Button will put the window behind all other windows on the screen. This is useful when you are finished with a window but don't want to close it.

The active window

The Zoom Button will enlarge or shrink the window. Clicking in the zoom box will enlarge a window to a larger size; clicking in the zoom box a second time will return it to its original size.

The Grow Box lets you adjust the size of the window. Dragging the grow box will continuously adjust the size of the window. Note that it is possible to have names or other information extend past the right edge of the window; if you need to see this information use the grow box to expand the window appropriately.

Most of the time, the window in which you are currently working is the *active window*. The active window is indicated by fully detailed borders; when a window is inactive its top border and scroll bar are blank. To activate a window so that you can work in it, simply click anywhere on it. The main control panel is always active; it is not necessary to click on it before using it.

A single click on an inactive window makes that window active, and in addition, the item in the window that was clicked responds, except for clicking the title bar, scroll bar or re-size button. This speeds up working with Performer because less clicks are necessary.

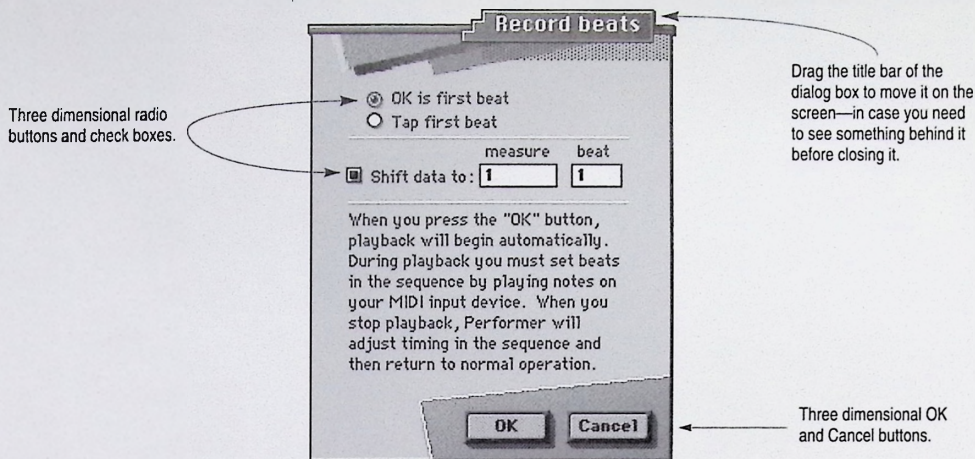
Closing all edit windows

Performer provides several shortcuts for closing all open edit windows (Event Lists, Graphic Editing windows, and QuickScribe notation window):

- Press command-option-W.
- Option-click the close triangle in any edit window.
- Press the option key and the Close command in the Windows menu changes to Close All Edit windows.

Dialog boxes

Performer's dialog boxes look more three dimensional than the standard Macintosh ones:



Even though these buttons look different, they act like standard Macintosh check boxes, radio buttons, and push buttons. For example, the text labels for radio button and check box options can be clicked to check the box or push the button. In addition, if you type in a text box, its corresponding radio button selects automatically.

Clicking shortcuts

Option-click: If you hold down the option key and click on a check box, all check boxes will be unchecked except for the one you Option-clicked on.

Command-click: If you hold down the command key and click on a check box, all check boxes will be checked except for the one you clicked.

Mouse techniques

Here are the mouse actions you'll use in Performer:

To click, move the mouse to position the arrow cursor on the object then press and quickly release the mouse button. Single clicks are generally used to select an action, confirm a selection or to select something for editing.

Keyboard and mouse actions

To double-click, move the mouse to position the arrow cursor on the object then click the mouse button twice in quick succession. The interval between the two mouse clicks can be set on the Control Panel on the Apple menu (refer to your Macintosh owner's manual about this). Double-clicking is generally used for opening things such as windows.

To press, move the mouse to position the arrow cursor on the object, press the mouse button and hold it down.

To drag, move the mouse to position the arrow cursor on the object, press the mouse button and, holding it down, move the mouse in the desired direction. Dragging is used to increase the size of a window, to move indicators (such as the tempo slider in the Metronome panel), to select multiple names, events or objects, or to select a region.

To scroll, press on the scroll box in the scroll bar and drag it in the desired direction. Scrolling can also be done by clicking or pressing on the arrows on the top and bottom of the scroll bar.

To learn more about mouse actions, consult the Macintosh Owner's manual.

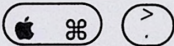
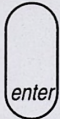
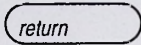
Some actions are done with the mouse and keyboard in conjunction:

To Shift-click, hold down the shift key, move the mouse to position the arrow cursor on the object and click the mouse. Shift-clicking is used for selecting noncontiguous items; for example, you would use Shift-click to select several independent events in an Event Editing window.

To Option-click, hold down the option key, move the mouse to position the arrow cursor on the object and click the mouse. Option-click is used to select the name of a track, sequence, song or marker for editing. After editing, the new entry can be confirmed by pressing the Return key.

To Command-click, hold down the command key, move the mouse to position the arrow cursor on the object and click the mouse. Command-click is used for selecting regions larger than can be

Keyboard commands



Cut
Copy
Paste
Erase
Repeat...
Merge

⌘H
⌘C
⌘U
⌘B
⌘N
⌘M

displayed on the screen. To do so, highlight an item or event at the start of the region, scroll with the scroll bars until the end of the region is visible, then Command-click at the end of the region.

The following keyboard commands are applicable to dialog boxes and pop-up boxes.

Pressing on the return key is the same as clicking on OK: it confirms the selection in the dialog box.

Pressing on the enter key will also OK a dialog box. It is also used when editing a list of names or data, confirming the current one and moving to the next.

Pressing the command and period keys together is the same as clicking on the Cancel button: it cancels the selection and leaves the previous settings/values unchanged.

Pressing the escape key is the same as clicking a Cancel button and pressing command-period (.).

Pressing the tab key will confirm the current entry field, then move to the next field in the box or list and highlight it.

The *up arrow* will move through a list of names or events, confirming the current selection and moving to the previous one.

The *down arrow* will move through a list of names or events, confirming the current selection and advancing to the next one.

The *left and right arrows* move from field to field in the event list, confirming the current selection and advancing to the next one in the arrow direction.

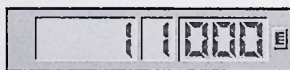
In addition to these, there are many shortcut keyboard commands that will allow you to choose commands from menus very quickly. They are indicated on the menus to the right of the commands themselves and can be used instead of pulling down the menu and selecting the command. To use a shortcut command, hold down the Command key and press the indicated key. For example, command-X is the shortcut for the Cut command. Instead of pulling down the Edit menu and selecting Cut, hold down the Command key and press the X key.

Specification of time units

is the shortcut for the Cut command. Instead of pulling down the Edit menu and selecting Cut, hold down the Command key and press the X key.

In Performer, you will always be dealing with time specifications. Performer gives you the option of using *measure time* (measure|beat|tick), *real time* (minutes:seconds.hundredths) and *frame time* (hours:minutes:seconds:frames). Full understanding of the time specifications you are using is essential. Below is a concise explanation of each of them:

Measure time (measure|beat|tick): A specification of measure-oriented musical location. The number of beats in the measure depends on the specified meter: 4/4 will define 4 beats per measure, for example. Subdivisions of the beat vary, according to the 480-ticks-per-quarter note constant. Thus, a beat in 6/8 time (an eighth note) will have 240 tick subdivisions, a beat in 2/2 time (a half note) will have 960 tick subdivisions and so forth. Measure time is useful since it is the most musical.



Real time (minutes:seconds.hundredths): Measurement in standard clock time. This is a simple, already familiar method for location.



Frame time (hours:minutes:second:frames): Frame time is a special type of real-time measurement. With it, you can synchronize Performer (via a SMPTE to MIDI converter) to a device that uses SMPTE time code as a time reference. Unlike measure time, frame time is used when absolute time location is necessary.

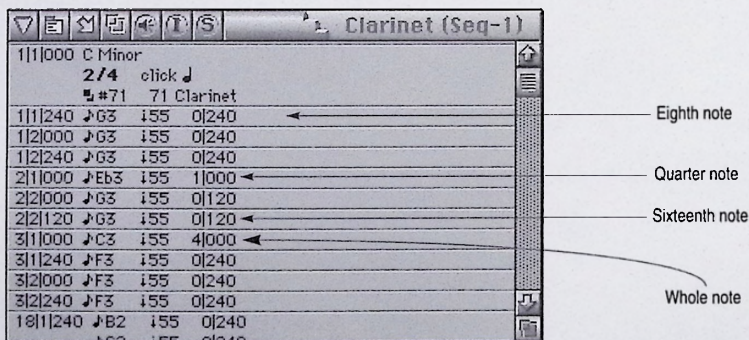


SMPTE stands for Society of Motion Picture and Television Engineers. Although SMPTE time code is used mostly in film and video work, it is increasingly used for audio applications. One SMPTE frame

Durations used in specifying note lengths

corresponds to one film or video frame. The number of frames per second depends on the equipment you are working with; Performer supports 24, 25, 30 drop frame, and 30 frames per second. SMPTE is useful as a standardized location scheme when synchronizing to production devices such as a tape deck or video deck. See the chapters called *Receive Sync* and the appendix *Synchronization Specifications* for a more detailed explanation.

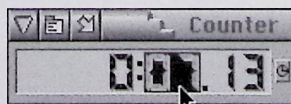
Times used in Event Editing windows and elsewhere to specify durations are displayed in quarter notes and ticks. Since Performer allows different meters in a sequence, it is necessary to use a comprehensible, easily divisible format to insure clarity and a lack of confusion. The quarters|ticks format fulfills this requirement, making it easy to understand durations without having to specify a measure value. For instance, a whole note is 4|000 (four quarter notes and no ticks), and a dotted quarter note is 1|240 (one quarter and 240 ticks).



Editing the Counter

The current playback location can be changed at any time by editing the Counter. You can edit the counter even while the sequence is playing back. To edit the current Counter location in Performer:

1. Click on the field in the time display to highlight it.



2. Type in a new time value.

While a field is highlighted, just type in a new value. Use the backspace key to erase an incorrect entry.

Pressing the Tab or the decimal key on the keypad will cycle through each field of a time display, highlighting each so that you can type in a value. For example, to enter the time 0:07.13 as shown in the example above:

1. Click on the minute field to highlight it.

2. Press 0.

3. Press the Tab or decimal key.

4. Press 0 and 7.

5. Press the Tab or decimal key.

6. Press 1 and 3.

7. Press the Return key.

As a shortcut, you can press the decimal key on the Macintosh keypad. To cancel the edit, press command-period.

Editing during playback

Many of Performer's features, such as windows, dialog boxes, edit region selection, edit commands, and other features can be used during playback. For example, you can open another window or use the Transpose command while the music is playing back; you do not have to press the stop button beforehand. So, the next time you are listening to your music and would like to make a change, don't reach for the stop button. Just execute the command while the music is playing.

Here are some examples of things you can do during playback:

- Select a region for editing (in an Event List, Tracks Window, etc.).
- Edit a region with the Edit or Region menu commands
- Rearrange Chunks in the Song window

- Cut, copy, drag, option-drag (copy), etc. notes and data in Graphic Editing and QuickScribe notation windows
- Reassign the playback channel for a track
- Add, delete, rename, or reposition a track
- Access a mini-menu command such as Set View Filter

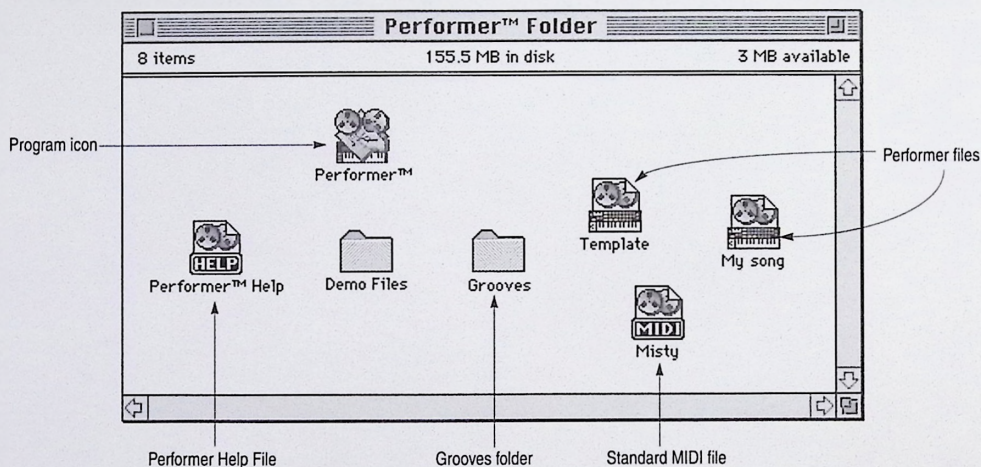
During playback and recording, the Counter and other displays may become irregular and seem to skip beats. This is due to Performer's primary obligation which is to receive and output MIDI data on time. Performer may have to devote all of the computer's resources towards this end and thus may not be able to keep the screen display completely smooth and current. The Click and Flash will provide an accurate determination of the tempo. In addition, editing commands may sometimes take longer due to the amount of processor time required to deal with playback.

Some features, because of their nature, cannot be accessed during playback. These features are either greyed out (unaccessible) during playback or will have no effect unless you press the Stop button before using them. Examples are:

- Using the MIDI Interface dialog box
- Save or close a file

Chapter 4 *Working With Files*

A single Performer file can contain one or more sequences and songs. It is represented in the Macintosh Finder by the Performer file icon.



Opening a new file

To open a new file, you must first start Performer.

1. **Double-click on the Performer program icon.**

You can also click once on the Performer icon and choose Open from the File menu.

2. **If you see a new file appear on the screen, with the tape-deck style control panel and Tracks window, you are ready to go.**
3. **If you see the standard Macintosh dialog box for opening files, click the New button (or press command-N).**

Opening an existing file

If you are already in Performer:

1. Select Close from the File menu.

This closes the file that is currently open. If you have modified the data in the file, Performer asks if you would like to save changes. The various windows will disappear and the file will close.

2. Select New from the File menu.

A new file will be created and the main control panel appears, along with the Tracks window. (You can customize the New command using Save as 'New' Template, described later in this chapter).

Opening a new file automatically opens a new sequence. This sequence is ready to record into right away. You can create other new sequences by choosing *Add Sequence* from the Chunks window mini-menu.

To open an existing file from the Finder:

1. Double-click on the file icon.

You can also click once on the file and choose Open from the File menu. This will start Performer and bring up the selected file.

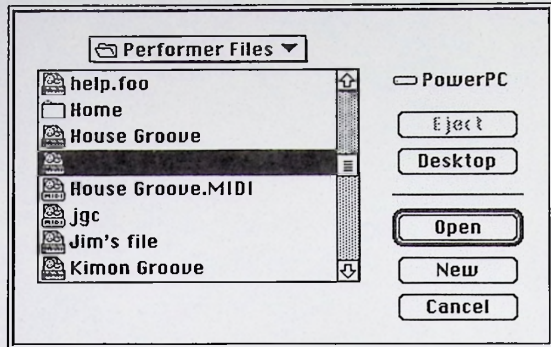
To open an existing file from within Performer:

1. If a file is already open, close it by selecting Close from the File menu.

You are given the option of saving changes in this file. The Performer windows will all disappear and the file will close.

2. Select Open from the File menu.

A dialog box will appear, containing a list of files on the selected disk. To see the files on a disk in a different drive, click on the Desktop button. To view files on another disk which is not currently in a drive, click on the Eject button and insert the other disk.



3. Click on the name of the file you wish to open.
4. Click on the Open button.

The file you selected will be opened. Double-clicking on the name of the file will also open the file.

Opening files in other formats

Performer can open files in the Professional Composer® and MIDI file formats. To open a file in one of these formats, simply select it from the Open dialog box as normal. A message will appear informing you that Performer is converting file formats. The file will open as a Performer file; if you want to save it back into the Professional Composer or MIDI file format you must use the procedure described later in this chapter.

In addition, files created in older versions of Performer can be opened in the new version; simply select the old file from the Open dialog box as normal.

Performer cannot open Mosaic files directly. To open a Mosaic file, save it as a MIDI file from within Mosaic using the Save As command in Mosaic's File menu. Once the file is saved in the MIDI file format, you can then open it in Performer.

Loading a chunk from another file

Once you have opened a file, the Load command in the File menu lets you load Chunks (sequences and songs) from other files directly into the open file without closing it.

Your Macintosh must have enough RAM available to support the load operation. Be sure to open and watch the Memory window, available in the Windows menu, whenever you load Chunks or Remote Controls. Try to have at least 100K available at all times.

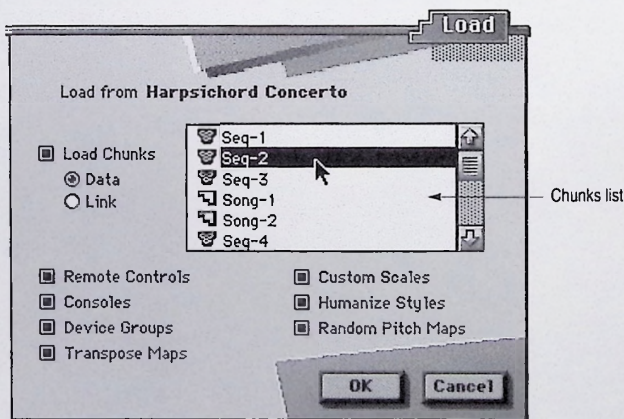
To load a Chunk into an open file:

1. Choose **Load** from the File menu.

The standard Macintosh Open dialog box appears.

2. Click the file containing the Chunk you wish to load, then click **Open**.

Alternately, you can double-click the file name. Performer's Load dialog box appears, displaying the file name at the top.



3. Make sure the **Load Chunks** option is checked.

If it is not, click its check box. The Chunks list displays all Chunks in the selected file.

4. Choose the **Data** sub-option.

5. Select the Chunk(s) you wish to load.

Click the Chunk name to select it. If you wish to load more than one Chunk, drag to select contiguous Chunks and shift-click to select discontinuous Chunks.

6. Optional: If you wish to load any other items from the selected file, select the appropriate option.

7. Click OK to confirm your choice or Cancel to withdraw the Load command.

Clicking OK causes the selected Chunk(s) to be placed in the Chunks window. You can change each Chunk's position in the Chunks list by dragging its Type icon.

Loading a song Chunk automatically loads its component Chunks. For example, you choose to load Song-1, which contains Seq-1, Seq-2, and Song-2. Song 2 contains Seq-3 and Seq-4. When you execute the Load command, all six Chunks (two songs and four sequences) will be loaded in and added to the Chunks list of the open file.

***Linking sequence
chunks from another file***

A memory-saving option in the Load command is to **Link** a sequence Chunk instead of actually loading it. A Link serves as a reference to a Chunk in a different file. Since a Link requires far less memory than the Chunk it references, you can build an extensive list of Chunks without running out of memory in your Macintosh.

Because a song in Performer is a collection of Chunks, song Chunks cannot be linked. Instead, just load the song using the procedure described in the previous section. Performer will automatically load the song's component Chunks. Alternately, you could open that song's file and use the *Merge Chunks to Sequence* command to transform the song into a sequence. The new sequence could then be linked. For more information about converting a song into a sequence, please refer to the chapter *The Song Window*.

For successful playback of links, the linked Chunk's file must reside in a folder with Performer or, if Performer is on the desktop, the file must also be on the desktop.

To link a Chunk from another file:

1. Choose *Load* from the File menu.

The standard Macintosh Open dialog box appears. If necessary, click the Drive button repeatedly to view each drive present.

2. Click the file containing the sequence you wish to link, then click *Open*.

Alternately, you can double-click the file name. Performer's Load dialog box appears, displaying the file name at the top.

3. Make sure the *Load Chunks* option is checked.

If it is not, click its check box. The Chunks list displays all Chunks in the selected file.

4. Choose the *Link* sub-option.

Any song Chunks in the window become italicized, indicating that they cannot be linked.

5. Click the sequence(s) you wish to link.

If you wish to Link more than one sequence, you can drag to select contiguous Chunks and shift-click to select discontinuous sequences.

6. Optional: If you wish the Chunk's Remote Controls assignments to be loaded with the Chunk, choose the *Load Remote Controls* option.

Deselecting this option loads only the Chunk's song or sequence data.

7. Click *OK* to confirm your choice(s) or *Cancel* to withdraw the Load command.

Clicking OK places a Link to each selected Chunk in the Chunks window and a corresponding Chunk Select control in the Remote Controls window.

After you have linked a Chunk, its name appears italicized in the Chunks window of the current file. The Link's Comment field displays the file from which the Linked Chunk will be loaded. When the Link is play-enabled, Performer will take a few moments to load it; the amount of time this takes depends on the size of the Chunk.

☛ Please remember: *for successful playback of links, the linked Chunk's file must reside in a folder with Performer or, if Performer is on the desktop, the file must also be on the desktop.*

Saving files

Please read this section carefully! When you open a file from a disk, Performer makes a copy of that file and puts it in the Macintosh's temporary memory (called Random Access Memory, or RAM). When you work with the file, you are actually working with the copy that is in RAM, not the original file on the disk. If you choose *Save* from the File menu, Performer writes the changes you have made into the original file on the disk. If you do not save, the changes you have made are never written to the disk. For example, if you quit without saving changes, the work you have done is not saved on the disk and is permanently deleted from the computer's memory.

This is why files should be saved frequently! If Performer or your Macintosh should malfunction, all of the work you have accomplished since you last saved may be lost! However, if the file was recently saved, you can retrieve the latest version from the disk and proceed without having lost much work.

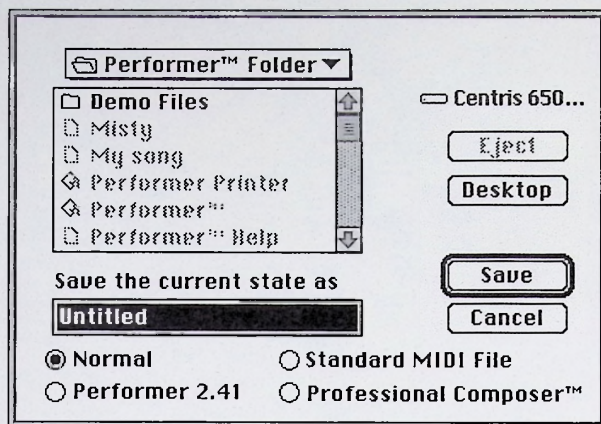
Always be sure that the disk you are saving the file on has enough room! Files can be saved to any disk with sufficient space for the file. They can also be saved with different names.

Here's the basic procedure to save a file:

1. Choose the Save command from the File menu.

Your file is saved on the disk in its current state, replacing the old version with the same name. If you want to keep the old version, use the *Save As* command on the File menu (see below) instead to save the current version under a different name.

If you are saving the file for the first time, a dialog box will appear prompting you for a name:



2. Type in the name of your file.

You can't use a colon in the name; all other characters are permitted, including spaces. If you enter a name that is already in use, a dialog box will ask you to confirm your choice.

3. Click on the Save button.

Pressing the Return key will do the same as clicking on the Save button. If you want to save the file to a different disk, click on the Eject button, insert a new disk and, after typing in the name, press the Save button. Pressing Cancel withdraws the Save command.

The Save As command is used to save a file under a different name or to a different disk:

1. Choose Save As from the File menu.

The Save As dialog box will appear.

2. Type in the new name for the file.

You can't use a colon in the name; all other characters are permitted, including spaces. If you enter a name that is already in use, a dialog box will ask you to confirm your choice.

Saving a file under a different name

Saving a file to a disk not currently in a drive

3. Click on the Save button.

Your file is saved on the disk in its current state under the new name.

To save a file to a disk not currently in a drive:

1. Choose the Save As command from the File menu.

2. The Save As dialog box will appear.

3. Click on Eject.

The disk that is currently displayed in the dialog box window will be ejected. If you want to use the other drive, click on Drive before clicking on Eject.

4. Insert the disk you wish to save the file on.

5. Click on the Save button.

The file is saved on the disk you selected.

Performer saves almost every attribute of your file, including open windows and their screen positions, the on/off status of such features as Audible Mode and Patch Thru, your current choice of Event Editing display, your Chunk Start Times, and many others. If you find that your files often have very similar setups, use the Save As 'New' Template command, described later in this chapter, to customize your new files.

Saving a sequence in another format

Performer can save sequences in several other file formats:

- Standard MIDI file
- Performer Version 2.41 file
- Professional Composer™ file

Only sequences can be saved in these other file formats. If you wish to save a song, you can do so by converting it into a sequence beforehand. Please refer to the *Chunks Window* chapter later in this manual for information about converting a song into a sequence.

To save a Performer sequence in a different file format:

1. Play-enable the sequence that you wish to save.

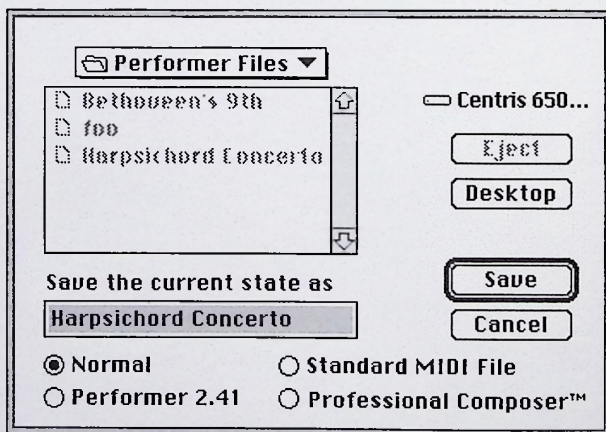
Do so by clicking the play-enable button next to the sequence in the Chunks window.

2. If you are saving a MIDI file, and you want the tempo and meter map of the sequence to be saved with the MIDI data, choose *Conductor Track* from the Metronome tempo control pop-up menu in the main control panel.

Do so by choosing Conductor Track in the Tempo Control pop-up menu in the Metronome.

3. Choose *Save As* from the File menu.

The Save As dialog box appears with four options: Normal, Performer 2.41, Standard MIDI File, and Professional Composer.



4. Click the desired file format.

5. Click *Save* to activate the conversion.

Saving as a standard MIDI file

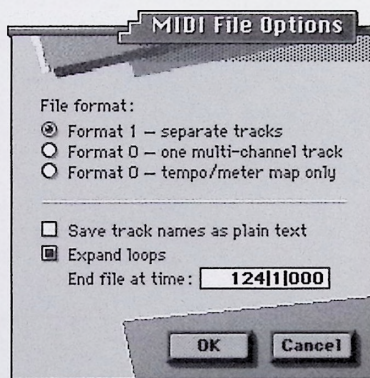
6. If you are saving a standard MIDI file, the MIDI File Options dialog box appears.

See “Saving as a standard MIDI file” on page 53 for more information about these options.

Use the procedure explained in “Saving a sequence in another format” on page 51. Music saved in the MIDI file format can be opened with any program that also reads and writes MIDI files—even programs that run on other types of computers.

MIDI File Format options

When you save a file as a standard MIDI file, the following dialog box appears:



- **Format 1:** separate tracks with tempo and meter information as the first track
- **Format 0:** one multi-channel track with tempo/meter information at the beginning
- **Format 0:** tempo/meter map only

Save track names as plain text

When selected, the *Save track names as plain text* option causes only plain text events, such as track names, to be saved. No special text events, such as track comments, are saved. This option is necessary



Saving as a Performer 2.41 file

Saving as a Professional Composer file

when transferring files to programs that do not support special text events. If you discover inconsistencies when transferring text in MIDI files, try using this option.

Expand Loops

Standard MIDI files cannot contain loops. The *Expand loops* option addresses this problem by converting each loop into a region of repeated data in the same way as Performer's *Repeat* command. The *End file at time* option allows you to specify the end time of the sequence in the box provided. For convenience, the box appears with the sequence's current end time.

Performer automatically opens MIDI files. For more information, see the *Open* section earlier in this chapter.

Performer's file format is constantly developing as new features are added. Due to these changes, files saved in the current format cannot be loaded into earlier versions of Performer. If for some reason you need to work with a file in an earlier version of Performer (2.41 or later), Performer lets you save sequences in the version 2.41 format:

To save a file in the 2.41 format, use the procedure described in "Saving a sequence in another format" on page 51.

When you Save As 2.41, songs in the file will not be saved. This is because Version 2.41 does not support songs. Therefore, any songs in the file you save will not be present in the 2.41 version of the file. If you don't want to lose the song when converting to the 2.41 format, you can easily convert it into a sequence, which *will* get saved in the 2.41 file. To do so, open the song's Song window, Select All, and choose *Merge Chunks to sequence* from the mini-menu. A new sequence, which is identical to the song, will appear at the bottom of the Chunks window list and get saved in the 2.41 file.

A Performer sequence can be converted into a format that is readable by Professional Composer®, an earlier score editing software package from Mark of the Unicorn.

To save a file in the Professional Composer file format, use the procedure described in "Saving a sequence in another format" on page 51. Make sure that you quantize both attacks and releases of all the notes in the sequence beforehand. Otherwise, the transcription in

Transferring a sequence to Mosaic™

Reverting to a previously saved version of the file

Saving a file as a 'New' template

Professional Composer will be filled with unwanted 32nd and 64th notes and rests. See the section on quantization for further information.

Once you have converted the file, quit Performer, start up Professional Composer, and open the newly created Composer file.

To transfer a sequence to Mosaic, Mark of the Unicorn's latest notation software package, save it as a Format 1 MIDI file. No quantization or other preparation is necessary because Mosaic does its own quantizing when you open the MIDI file in Mosaic. See "Saving as a standard MIDI file" on page 53 for information about saving standard MIDI files.

If you've made unwanted changes to a file, you can undo the changes you've made by returning to the last saved version. This operation is identical to closing the file and opening it from the disk again.

1. Choose Revert to Saved from the File menu.

A dialog box asks you to confirm this choice.

2. Click on OK to confirm the action, Cancel to withdraw it.

Reverting to the last saved version of the file means that all changes you've made since you opened or last saved the file will be lost.

Reverting to a previously saved version is useful when experimenting with a file. You can quickly remove any changes by using this command. Make sure that you save the file in the state you want it before beginning to experiment.

The Save As 'New' Template command, found in the File menu, allows you to customize your copy of Performer. You control what appears on the screen when you open a new file, by creating your own New file template. A template is a "skeleton" file, a framework designed to save you time when building your files.

For example, let's say you typically work in files with one sequence, the same number of tracks, Auto Channelize, measure time and SMPTE displays in the Counter window, and a Sequence Start Time of -1. In addition, you arrange Performer's windows to suit your screen size and style of working.

You can use the Save As 'New' Template command to give your 'New' files all of these characteristics *automatically*.

When you choose Save As 'New' Template from the File menu, Performer remembers the exact state of the file and reproduces it next time you request a new file. The New command, also in the File menu, will produce an untitled, empty new file identical to the source file.

To use the Save As 'New' Template command:

- 1. If you aren't already in a Performer file, open one or choose New from the File menu.**
- 2. Configure Performer's windows, their contents, and any other features as you find most useful.**

This file will be your template source file: Performer will remember your exact track setup, window layout, Patch Thru setting, and so on.

- 3. Choose Save As 'New' Template from the File menu.**

A dialog box will ask you to confirm or cancel your request.

- 4. Click OK to confirm the command, Cancel to withdraw it.**

If you confirm the command, Performer redefines your 'New' template based on the current file. All attributes specific to the current file, except for MIDI and Conductor track data, now comprise a New file in the copy of Performer you are using.

To see the effects of Save as 'New' Template, close the current file and choose New from the File menu. A new, empty, untitled file will appear, identical to the last file you saved as 'New'.

Hints for using Save As 'New' Template

Remember that the Save As 'New' Template command customizes only the copy of Performer in which it is used. Every copy of the program has its own template; a fresh copy of Performer will yield the default New file setup.

For this reason, make a spare copy of your template source file using the Save As command described earlier in this chapter. Pick a suitably descriptive name for the file, like "Perf Template". This way you can retrieve your preferred setup into any copy of Performer by opening "Perf Template" and immediately choosing Save As 'New' Template from the File menu.

Redefining your New file template is easy. For example, you've used the Save As 'New' Template command in a file that contains only one track.

To quickly add more tracks to your template:

- 1. If you are in a Performer file, choose Close from the File menu to close it.**

If you've made any changes to the file, you'll be prompted to save them.

- 2. Choose New from the File menu.**

A new file will open, identical to the file you saved as New.

- 3. Activate the Tracks window if it is not already active.**

Click anywhere in the window to activate it.

- 4. Hold down the Option key on your Macintosh keyboard and choose Add from the Tracks window mini-menu.**

A small dialog box will prompt you for the number of tracks to be added. Type in the desired number.

- 5. Choose Save As 'New' Template from the File menu.**

The existing file will become the new template.

Quitting Performer returns you to the Finder.

Choose *Quit* from the File menu.

Quitting Performer

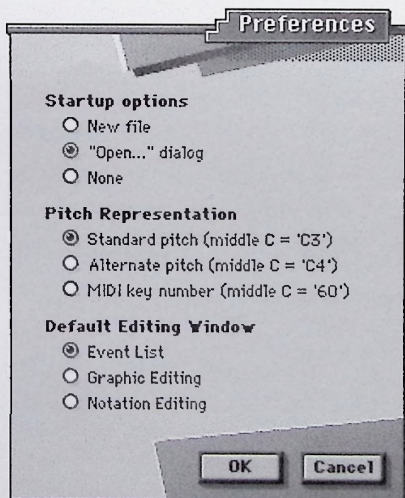
Setting Performer's startup preferences

A dialog box may appear asking you if you want to save changes made to the file. To save the changes, press Yes. If you don't want to save changes, press No. To withdraw the Quit command and return to your Performer file, press Cancel.

When Performer first opens, you have three choices for what it can do:

- Open a new file
- Present you with the Open file dialog box, which lets you open either an existing file or a new file with the "New" button
- Neither of the above, which lets you either choose Open or New from the file menu

To set this preference, choose Preferences from the File menu and choose the desired setting. This setting is remembered in the Performer Preferences file in the Preferences Folder inside the System Folder on your hard disk.



File and disk errors

The following are a few file and disk errors that commonly occur. *Always keep plenty of up-to-date backups of your important files as you work. Almost any software problem is survivable as long as you have kept backups of your work. See Appendix B: Troubleshooting and Customer Support for more information about problems you may encounter with Performer files.*

There isn't enough room on the disk. Your disk is too full. Eject the disk and insert one with plenty of free space on it. Note: If Performer runs out of disk space while saving a file, the file on disk will be damaged. If this happens, *immediately use the Save As command to save the file to a disk with more space available.* If you fail to do this, and you have not made a backup file, you will have lost an entire file. As a rule, before opening an existing file, be sure the disk on which it is stored has enough free memory to hold the information you expect to add.

An error occurred while writing the file. This is a dangerous situation. In all probability, the existing copy of the file on the disk has already been erased so that the new copy could be saved. Because of the error, any partial file that has been saved cannot be read. At this point, the only good copy of the file is in memory. Immediately try to save the file on another disk. *Do not* attempt to use the Revert to Saved command on the File menu; the saved copy is damaged and you will lose the file in memory.

You tried to open a Professional Composer file made by using the Save as Composer command in Performer and didn't get what you expected. If the file has all sorts of very small note values, try quantizing the Performer file to a larger note value. Make sure that you quantize both attacks and release of all the notes. To confirm that you have successfully quantized, check attack times and durations of notes in the Event Editing window of each track. If correctly quantized, all durations will be rounded values such as 1/000 (quarter note), or 0/240 (eighth note). See the section on quantization for more details. Once you have successfully quantized the sequence, save it as a Professional Composer file and try opening it in Professional Composer again.

The computer ran out of memory. Either the data you were recording filled up memory or you edited the file quite a bit. Try recording smaller segments and saving the file more often.

Helpful file and disk hints

The disk is locked. Unlock the disk by sliding the small tab on the back of the disk in the upper left-hand corner down so that it covers the small hole.

The disk can't be read. The disk itself may be damaged. Return to the Finder and try inserting the disk again. If it still can't be read, it may be irretrievable.

File menu commands cannot be used during playback. To use a command in the File menu, press the stop button beforehand.

Save your file as often as possible. You should use the Save command after every significant change to your file.

Always keep backup copies of your important files. We cannot emphasize enough the importance of this. At the end of a working session, copy to a backup disk all of the files you recorded and edited. This way, if anything should happen to your original, you will have fully updated backup of the file.

If you are working with floppy disks, you should store your files on a disk separate from Performer. This gives you lots of room for saving files.

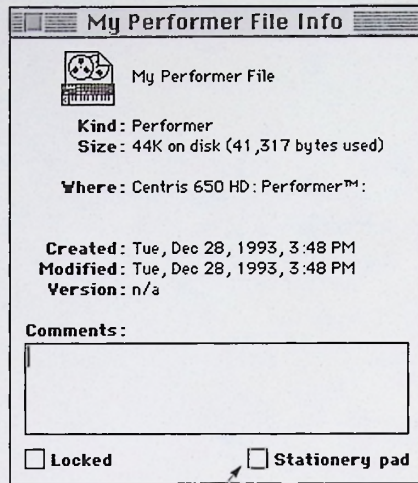
Saving a file under a different name while working can be useful when you want to keep a record of earlier versions.

When saving files during a working session, it is a good idea to save alternately under different file names; if something should happen to one of the files, the other will be a recent version. For example, a file can first be saved under the name "Session1". The next time it is saved, choose the Save As command from the File menu and save it as "Session2". The following time, it is saved as "Session1" again, then "Session2" and so forth. To be even more careful, save a file to different disks during a working session.

Hard disk users should make sure to backup their files to floppy disks. This should be done as often as is bearable, at least at the end of every working session and several times during the session if possible. The consequences of not making floppy backups are severe: if your hard disk is damaged, some or all of the files may be lost forever.

Using System 7's stationery feature

Performer supports System 7's "Stationery pad" feature in the Get Info window for a file as shown below:



Stationery pad option in the Get Info window.

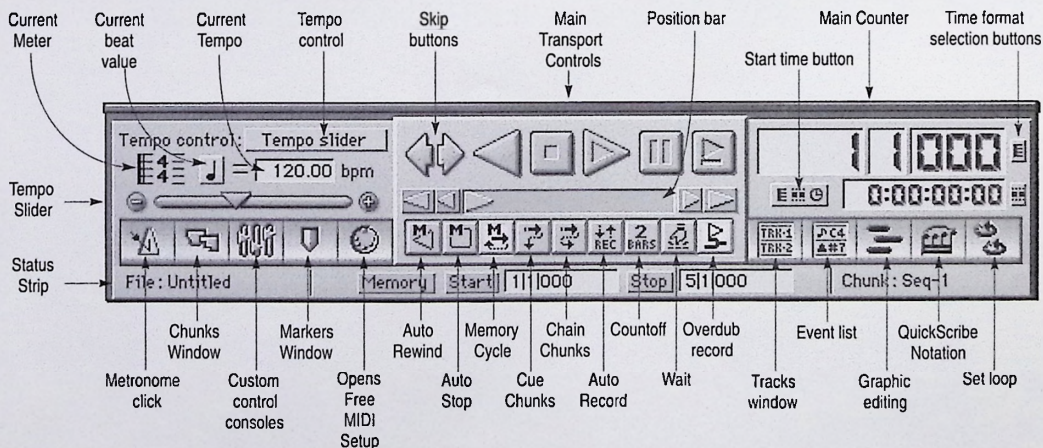
When this option is checked, the file can be opened, but System 7 will prevent you from modifying the original file by forcing you to Save As when you attempt to save the file. This option is great for preserving files that you do not want to modify and that you use regularly as a "template" from which to build other files. For more information about the Stationery pad option, consult your System 7 documentation.

Chapter 5 *The Consolidated Controls Panel*

Performer's Consolidated Controls panel contains all the functions that make Performer "go": buttons to record, play, rewind, set tempo, and more. The main transport controls look and act much like the transport controls for a tape recorder. Additional buttons provide immediate access to many of Performer's significant features. The panel can be opened by choosing *Consolidated Controls* from the Windows menu.

To conserve screen space, the Consolidated Controls panel does not have a title bar. To move the panel, hold down the shift key and drag. If the panel is behind other windows, choose Consolidated Controls from the windows menu to bring it to the front.

Quick reference



Tempo Slider: Displays the current tempo in beats per minute. When the Tempo Control pop-up menu is set to *Metronome*, drag the triangular indicator or press on the plus/minus buttons to change the tempo (+ to increase the tempo, - to decrease it).

Current Meter: Displays the meter at the current location in the Chunk. To change the meter, you must use the Change Meter command on the Change menu or insert a Meter change event in the Conductor track.

Current Beat Value: Displays which note value gets the beat in the beats-per-minute tempo indicator. Click on it to change it.

Current Tempo: Displays the current tempo in beats per minute. Click on it and type in a new tempo or drag the Tempo slider.

Tempo Control: Selects the current source of the tempo from a pop-up menu. Tempo can be controlled from the Tempo slider, the Conductor track, or remotely from a MIDI controller such as a mod wheel.

Skip buttons: If you have more than one sequence or song in the file, these buttons skip to the next or previous one, much like the skip buttons on a CD player. To view sequences and songs, open the Chunks window.

Main Transport Controls: These are Performer's main controls for playback, recording, etc. The Skip buttons change the currently play-enabled sequence to the next or previous Chunk in the list. The Position Bar indicates the current playback position of the currently play-enabled sequence. Use the Position Bar arrows to quickly advance or rewind the current location while in playback.

Position bar: Indicates the current playback location with a scrolling arrow. Scroll buttons on either side of the bar provide fast forwarding and rewinding.

Start time button: Opens a dialog box which allows you to set the start time for the Main Counter's three time formats: measure time, SMPTE time, and real time.

Main Counter: Displays the current playback position in one of Performer's three time formats: measures|beats|ticks, real time, or SMPTE time. Click the time format icon to the right to cycle through the three formats. Click the numbers and type to change the playback location. For more information about editing times in the Main Counter, refer to the *Counter Window* chapter.

Time format buttons: Cycles the display in the counter through Performer's three time formats: measures | beats | ticks, real time, or SMPTE time.

Set Loop button: Creates a loop over the selected region in the Tracks List or Tracks Overview. Select a region and click this button to create a loop. At least one track name or track segment must be highlighted to create a loop with this button.

QuickScribe Notation Window button: Opens the QuickScribe Notation window for the currently selected track(s) in the Tracks List or Tracks Overview. At least one track name or track segment must be highlighted to open Notation Editing with this button. Provides notation editing and printing.

Graphic Editing Window button: Opens the Graphic Editing window for the currently selected track(s) in the Tracks List or Tracks Overview. At least one track name or track segment must be highlighted to open Graphic Editing with this button.

Event List Window button: Opens the Event List window for the currently selected track(s) in the Tracks List or Tracks Overview. At least one track name or track segment must be highlighted to open Event List with this button.

Tracks Window button: Opens the Tracks window or brings it to the front if it is already open.

Overdub record button: Toggles overdub record mode, in which newly recorded data merges with existing data instead of replacing it.

Wait button: Causes Performer to wait for a keystroke from a MIDI or Macintosh keyboard as a signal to start playing back or recording.

Countoff button: Causes a number of measures to countoff before playback or recording. The button denotes the number of measures, which can be set by double-clicking the button.

Auto-Record button: Causes automatic punch in and punch out during recording at the start and end times specified in the Auto Record Bar.

Main Transport Controls

Chain Chunks button: When highlighted, starts playback of the next Chunk in the list after the current playback Chunk reaches its End time.

Cue Chunks button: When highlighted, it play-enables the next Chunk in the Chunks list after the current playback Chunk reaches its End time and stops. To begin playback of the next Chunk, press the Play button, or a remote control for the Play button.

Memory-cycle button: Causes the region between the Memory Start and Stop points to seamlessly repeat. In the Tracks overview, repeat barlines appear in the time ruler to indicate the repeat points.

Auto-Rewind button: Causes automatic rewinding to the Memory Start location any time playback is stopped (for any reason).

Auto-Stop button: Causes playback or recording to automatically stop at the Stop location in the Memory Bar.

FreeMIDI button: Opens the FreeMIDI setup program, in which you can make changes to FreeMIDI's representation of your current MIDI studio setup.

Markers Window button: Opens the Markers window for the currently play-enabled Chunk or brings it to the front if it is already open.

Custom Consoles Window button: Opens the Sliders window or brings it to the front if it is already open.

Chunks Window button: Opens the Chunks window, which displays all of the sequences and songs currently stored in the file.

Metronome click button: Turns the audible metronome click on or off.

Status Strip: Displays the name of the currently open file and currently play-enabled Chunk. Also displays the Memory bar, which allows you to set start and stop times for the Auto-Stop, Auto-Rewind, and Memory-cycle functions.

The Main Transport Controls are the buttons that make Performer "go": with them you can record, play, rewind and more. The Main Transport Controls are enabled by clicking on them. When a button is enabled, it is highlighted and its function is active: the Record

The Play button and playback



button records, the Pause button pauses, etc. Most buttons can be disabled by clicking a second time. To disable the Play and Record buttons, press the Stop button. In some situations (when in external sync, for instance) buttons may turn grey signifying that they cannot be used.

Think of Performer's motion controls as similar to tape recorder transport controls. But Performer's motion controls are more flexible than their hardware counterparts in that they are programmable via the Memory buttons (on the left of the window), utility buttons (on the right) and menu commands.

Clicking on the Play button starts playback of the currently play-enabled sequence or song. Playback will begin from the current time specified in the Counter. Playback can be delayed by the Countoff button and held by the Pause and Wait buttons.

The Play button is highlighted while the sequence is playing. It flashes (or turns gray on a black and white display) when waiting for synchronization in the External Sync mode or when the wait button is on.

The Position Bar arrows can be used to quickly advance or rewind the current location while in playback.

If you start playback in the middle of a sequence, you may not hear exactly what you expect. This is because Performer moves forward through the stream of data stored in each track, sending each event that it encounters, such as note-on and note-off commands. If you start playback in the middle of a sequence, notes which are sustaining at that point will not sound because their note-on occurred before the point at which playback began. Performer has a specially designed feature called *Event Chasing* to avoid this problem. To learn how to enable Event Chasing, see the section called *Event Chasing* at the end of the *Playback* chapter.

During playback, some Performer features become inaccessible, such as the Save command in the File menu. Many other features, however, including all editing commands, can be used even during playback. As a general rule, commands that cannot be used will either appear greyed out during playback or they will have no effect.

The Rewind button



Clicking on the Rewind button sets the current location to the start of the sequence. If the Memory Bar is showing, clicking on the Rewind button will rewind to the Memory Start location. Double-clicking the button will always rewind to the start of the sequence or song.

If the Rewind button is clicked during playback, playback is held for a moment while the sequence rewinds. Playback then resumes from the rewind location.

If the Rewind button is clicked during recording, the record button is turned off. The sequence rewinds normally and resumes in playback mode.

Although Performer rewinds much faster than a tape deck, long sequences may take one or two seconds to rewind.

Using the Auto-Rewind function is a fast way of locating a frequent rewind location. See *The Auto-Rewind button* below.

The Stop button



Clicking on the Stop button stops playback and recording. It also turns off the Pause button. All notes sounding when the Stop button is clicked will cease.

The Stop button turns off all notes currently on. If the Auto-Rewind feature is on, Performer will rewind to the Memory Start location when the Stop button is clicked.

The Pause button



Clicking on the Pause button once turns it on; clicking on it a second time turns it off. The Pause button is highlighted when it is on.

Turning the Pause button on during playback will cause playback to be suspended without turning any notes off. Turning it off will cause playback to resume.

If the Pause button is turned on before playback, playback will be suspended until the Pause button is turned off.

While the Pause button is on, you can use the Rewind button, Position Bar, and Counter window to adjust the current playback location. You may also set times in the Edit, Memory, and Auto-Record bars.

The Record button and recording



Clicking on the Record button turns it on and begins recording in the currently play-enabled sequence from the current location in the counter. When it is on, the Record button is highlighted and can be turned off by clicking on it again. This disables the record function while continuing playback. You can also turn on and off the record button during playback for manual punch-in and punch-out. A more general way to think of the Record button is as an on/off toggle switch that you control manually.

At least one track must be record-enabled before the record button is pressed. This is done by clicking on the Record-Enable button for the desired track (or tracks). Record-enabling a track makes it the destination for incoming recorded data.

If the Auto-Record button is enabled, the Record button will flash when clicked on (or turn grey on a black and white display). It will then turn red (or black on a black and white display) when the Punch In location is reached. When the Punch Out location is reached, the Record button returns to "record-ready" mode.

If the Record button is enabled and grey due to Auto Record, clicking on it will turn it off, cancelling the punch-in.

When slaved to external sync, stopping or rewinding the master device will turn off the record button except in the case of Tap tempo sync, which requires that you click the Stop button.

Overdub record mode



If you click the Overdub button, Performer goes into Overdub record mode. Overdub mode causes all recorded data to merge with, instead of replace, pre-existing data on the record-selected track. The pre-existing data on the track is not erased.

The word overdub is used in a very specific sense in Performer: real-time merging of incoming data with data already on a track. It works as if you recorded one track, recorded a second track to go along with it and then merged the two. You should turn off Overdub when you are finished using it since it can produce unwanted effects if left on by mistake. You can use the Overdub mode in conjunction with memory cycle to build patterns in multiple passes over a region. This method is similar to that used with many drum machines. (Overdub

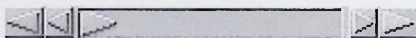
Undo Record

The Position bar

does not function on the Conductor Track; specifically, recording on the Conductor Track while slaved to Tap tempo sync always erases existing tempo events.)

By choosing *Undo Record* from the File menu, the track you recorded into will be restored to its state before recording. The Redo command returns the track to its state after recording. Going back and forth between the two states allows you to do A/B comparisons. Note that only the last command can be undone; if you edit your data after recording you will no longer be able to undo the Record command.

The Position Bar indicates the current position in the sequence. The indicator can be moved to change the location: left to rewind, right to advance. The far left is the beginning of the sequence, the far right is the end.



To change the current position in the sequence, drag the scroll triangle to the desired location. If you press on the grey bar, the scroll triangle will move to that spot. If you keep pressing, you can drag it to a new location.

The position bar can be used during playback as well as when the sequence is stopped.

The same applies to the Position Bar Arrows. Using them during playback is called “cueing”. The right set of arrows cues forward in time, the left set cues backwards. The smaller arrows cue slowly, the larger ones cue faster. The left arrows cause playback to pause while cueing backwards until the arrow is released. If used during recording, the Record button will be turned off before cueing. The Position Bar can also be used while the Pause button is on during playback.

The Position Bar can be used to find a relative location in a sequence. It may not be useful for finding exact locations (use the Counter or Markers instead) but is perfectly suited for finding the beginning and end of a sequence: simply drag the scroll triangle to the far left or right.

The Memory buttons

The Auto-Stop button



The Auto-Rewind button



The Memory-cycle button

Use the Position Bar to move short distances quickly in a sequence. Since forward cueing is audible, you can use it to accurately locate a particular note event or region.

The Memory buttons (Auto-Rewind, Auto-Stop and Memory-cycle) allow you to automate the primary motion controls. By using the Memory buttons, you can program the motion controls to activate at times specified in the Status Strip.

Enabling the Auto-Stop button causes playback of the sequence to automatically stop at the Stop location on the Memory Bar. Clicking on the Auto-Stop button enables it; when enabled, it is highlighted.

Clicking on the Auto-Stop button causes the Memory Bar to appear if it is not already present.

The Memory-cycle button and the Auto-Stop button cannot be enabled at the same time.

Enabling the Auto-Rewind button causes the sequence to automatically rewind to the Start location on the Memory Bar. This occurs when the Stop button is pressed or when playback reaches the end position in the Memory Bar in Auto-stop mode. Clicking on the Auto-Rewind button enables and highlights it.

Clicking on the Auto-Rewind button causes the Memory Bar to appear if it is not already present.

Auto-Rewind is useful for returning to a particular location after stopping. It saves you from having to stop and rewind manually.

The memory-cycle button is a cycle-playback and cycle-recording feature that causes a region of the entire sequence to be played repeatedly until the stop button is pressed, just like drum machines and hardware sequencers. Cyclic playback begins when the sequence reaches the specified Memory-cycle region. When the Counter reaches the end of the region, it seamlessly returns to the beginning and will continue to do so until you press the stop button, unhighlight the Memory-cycle button, or cue past the end time.



Viewing Memory-Cycle points graphically

Use Memory-cycle for multiple consecutive playbacks of a particular region. This can be very useful for cycle-recording a loop section or drum pattern, mixdowns, rehearsing a part that you plan to record, or for scrutinizing a particular region of a performance.

When cycle-recording, you add a new part to the loop with each consecutive pass. Before doing so, be sure Performer is in overdub record mode so that each new pass doesn't erase the last one.

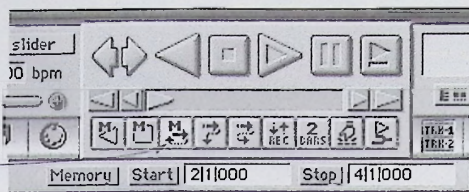
If you want to permanently loop a region in one or more tracks and specify the number of times the loop will repeat, insert a loop as described in chapter 13, "Looping".

Click on the Memory-cycle button to enable it. This highlights it, and causes the Start and Stop times to appear in the Memory Bar if they are not already present. The next section discusses several ways to set the start and stop times.

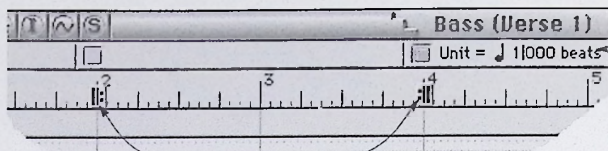
The Memory-cycle button and the Auto-Stop button cannot be enabled at the same time.

When Memory Cycle is enabled, the start and stop times appear numerically in the Memory bar just below the Memory buttons. They also appear graphically as repeat barlines in the Time Ruler of the Tracks Overview and Graphic Editing windows at the Start and Stop time as shown below:

Memory-cycle button is activated.

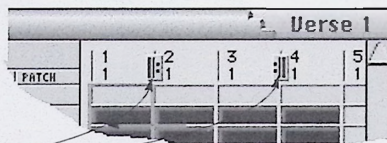


Memory bar start and stop times are displayed here. You can change them by typing or by clicking the Start and Stop buttons on the fly during playback.



Edit resolution

Repeat barlines are displayed in all time rulers. They can be dragged left and right; when you drag them in the Graphic Editing, they snap to the current edit resolution.



Playback cycles between these points seamlessly. You can drag the repeat barlines left and right with the mouse to change the cycle points. If the edit resolution check box is checked, the barlines snap to the current resolution setting (such as 8th notes, for example) as you drag them. For an explanation of edit resolution, see "The Edit Resolution Box" on page 292.

You can adjust the cycle points at any time, even during playback. This lets you build patterns and other tasks without ever having to stop the music.

Setting Memory-cycle points

The Memory-cycle region is defined by the Start and Stop times in the Memory Bar. You can set these points by typing them into the memory bar. You can also set them by selecting a region in the time ruler of the Tracks overview or any Graphic Editing window. To do so:

Selecting the Memory-cycle region for editing

The Countoff button

1. Set the Edit resolution in the time ruler.

If you want the end points to land directly on beat or measure boundaries, the easiest way to do so is to set the edit resolution to an appropriate value, such as eighth notes or quarter notes. If you want to be able to set the loop points with no constraints whatsoever, uncheck the edit resolution box.

2. Drag over the desired region in any time ruler.

3. Choose Remember Times from the Basics menu, or press command-R.

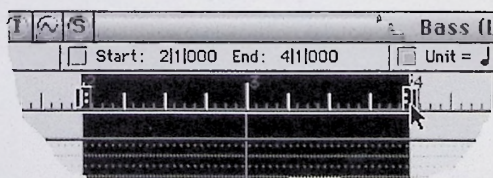
Doing so causes Performer to store the end-points of the region you have selected.

4. Highlight the Memory-cycle button if it is not already highlighted.

5. Click the word "Memory" in the memory bar.

The region is loaded into the Memory Start and Stop times. In addition, the Memory-cycle repeat barlines appear in the time rulers at the beginning and end of the region you highlighted. Now Performer will cycle between them during playback and recording.

If you would like to quickly select the region within the Memory-cycle repeat barlines to insert a loop, quantize, or any other editing operation, double-click one of the two repeat barlines.



Enabling the Countoff button causes a countoff of a specified number of measures before playback or recording. The Counter does not move forward until after the countoff. Clicking on the Countoff button enables and highlights it. You must enable the Click or Flash (in the Basics menu) to hear or see the countoff.



To set the number of countoff measures, either double-click or Option-click on the Countoff button. A dialog box appears in which you can enter the number of measures and specify whether the countoff should occur only when recording. If the *Countoff only when recording* option is chosen, there will be a countoff before recording, but not before playback or any other function.

The countoff bars are in the same meter as the first measure of the sequence. See the *Change Meter* chapter for information on changing meters.

Use the Countoff button to give yourself time to adjust to the current tempo and prepare for recording. Using the Countoff and Wait buttons allows ample preparation for a recording pass; this is particularly useful in situations where the computer and keyboard are not adjacent.

The Wait button



Enabling the Wait button causes Performer to wait until it receives a keystroke from a MIDI or Macintosh keyboard before playback or recording.

To enable the Wait button, click on it; it will highlight. Then, press either the Record or Play buttons. The wait button will then begin to flash, signaling that it is waiting for a keystroke. To start playback or recording, press a key on the Macintosh keyboard or your MIDI controller instrument. If recording is enabled, the MIDI event you send to turn off Wait will be recorded.

The Wait button will remain enabled until it is clicked off. Thus, it will be in effect every time the Record or Play button is clicked on.

Use Wait to give yourself a moment to ready yourself at your keyboard or other input instrument before recording. Using Countoff and Wait together allow you as much time as you need to prepare for recording.

While the Wait button is on, you can use the Rewind button, Position Bar, and Counter window to adjust the current playback location. You may also set times in the Edit, Memory, and Auto-Record bars.

The Auto-Record button



Auto-Record causes recording to automatically turn on and off in a specific region. This allows you to record without having to manually enable and disable the Record button.

Clicking on the Auto-Record button enables and highlights it. Clicking on the Auto-Record button also causes the Auto Record punch in and punch out times to appear in the Status Strip. Punch in and punch out times are specified in the Auto Record Bar: *Punch in* is the time where recording begins; *Punch out* is where recording ends. Auto-Record can be used while Performer is slaved to external sync; see the chapter *Receive Sync* for details on recording while slaved to each type of sync.

The Auto-Record button will remain on until you click on it again to disable it. Remember to disable it when you finish using it.

To use Auto-Record:

1. **Activate the Tracks window by clicking in it.**
2. **Click on the Record-Enable button of a track.**
3. **Press the Auto-Record button, which is located below the transport controls.**

The button highlights to signify that Auto-Record is on.

4. **Enter the Punch In and Punch Out locations.**

The Punch In location is where Recording will begin. The Punch Out location is where Recording will end. You can enter them in numerically in the Auto Record Bar. You can also set them up graphically. See "The Memory and Auto Record Bars" on page 81 and "Setting the punch-in and punch-out points graphically" on page 77.

5. **Move to a location in the sequence before the Punch In point.**

This location should be a spot that will give you plenty of time to prepare to enter the new material, anywhere from a whole section to a few bars before the Punch In point.

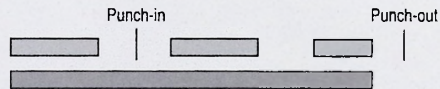
6. **Get ready to record.**

7. Press the Record button.

The sequence plays from the current location in the Counter. The Record button is initially flashing (or greyed out on a black and white screen). When the Punch In time is reached, the button becomes highlighted. When this happens, Performer is recording and you can enter the new material. When the Punch Out time is reached, the Record button will revert to flashing (or being gray on a black and white screen).

8. Press the Stop button when you are finished.

If Performer starts recording while a pre-existing note is sustaining, it does not cut off that note. Only notes with attack times after the punch in time are erased. For example, the two notes represented by light grey bars begin within the punch in region, but the sustained note represented by the dark grey bar begins before the punch in point:



After recording, the notes that began before punch in remain, but the notes that begin within the recorded region are replaced by the new material:

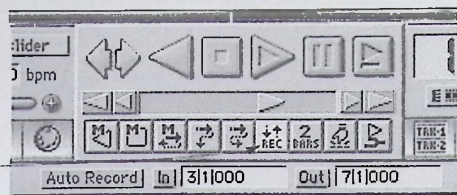


Anything you play while the Record button is grey is not recorded. This allows you to play along with the sequence and only record between the Punch In and Out times.

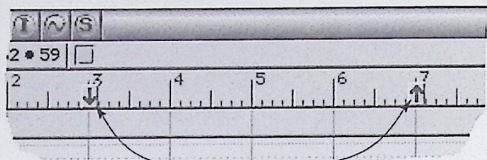
Setting the punch-in and punch-out points graphically

When Auto-Record is enabled, the punch-in and punch-out times are displayed graphically as arrows in the time ruler of the Tracks Overview, as well as the time ruler in any Graphic Editing window.

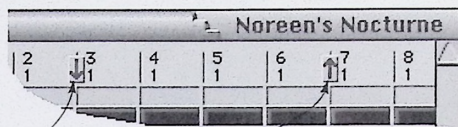
Auto-record button
is activated.



Auto-record bar start and stop
times are displayed here. You
can change them by typing or
by clicking the Start and Stop
buttons on the fly during
playback.



Punch points are displayed in all time rulers. They can be
dragged left and right; when you drag them in the Graphic
Editing, they snap to the current edit resolution.



**Quickly selecting what
you have recorded**

The Chunk Control buttons

You can drag the arrows left and right with the mouse to change the punch-in and punch-out points. If the edit resolution check box is checked, the arrows snap to the current resolution setting (such as 8th notes, for example) as you drag them. For an explanation of edit resolution, see "The Edit Resolution Box" on page 292.

You can adjust the arrows at any time, even during playback or recording. This lets you adjust punch-in and punch-out on the fly without having to stop the music.

You can quickly select the region between the punch points by double-clicking one of the arrows. This is a handy shortcut for editing what you have just recorded with auto-record.

The Skip Forward and Backwards buttons play-enable the next or previous Chunk (sequence or song) listed in the Chunks window. The Cue Chunks button play-enables the next Chunk in the list after the current Chunk plays to its end time and stops. The Chain Chunks button causes the next Chunk in the list to automatically begin playing when the current Chunk finishes playback.

Chaining using the Controls window

The Chunk cueing buttons in the Controls window allow automatic and real-time cueing of Chunks, and automatic playback of cued Chunks. The Cue Chunks, Chain Chunks, and Skip Forward and Backwards buttons let you play Chunks from the Chunks window, moving up or down the list at your command.

Chunk cueing does not yield seamless transitions between Chunks. Use them for cueing situations where a pause between Chunks—either brief or indefinite—is acceptable or preferred.

For example, the Chunk Controls buttons are perfect for live performance. Before a set, you could organize the Chunks list in the order you wish for the set. Then, before you begin, you could enable the Wait button. To begin the set, you simply press play. When the first song ends, the next song automatically cues up, and you can trigger it at your leisure from your MIDI keyboard. Or, without the Wait button, you can have Performer go right into the next song without waiting.

It is also possible to cue and play Chunks remotely from your MIDI controller. For more information, please refer to *The Remote Controls Window* chapter.

Clicking either the Cue Chunks or Chain Chunks button causes the Memory Bar to appear in the Status Strip. The Stop time displayed in the Memory Bar indicates the measure time at which the current Chunk will stop playing and the next Chunk will be cued. This time appears automatically when a Chunk is cued; it corresponds to the Chunk's End time in the Chunks window.

You can edit the Memory Bar time by clicking it, but this change lasts only until the next Chunk is enabled. If you wish a different End time to appear in the Memory Bar automatically for a particular Chunk, pop-edit the End time in the Chunks window. Simply click the Chunk name and choose *Auto/manual end time* from the Chunks window mini-menu. The time becomes bold and editable. *Remember that the End time only affects a sequence's playback length when using the Chunk control buttons, not when the Chunk is played as part of a song.*

The Cue Chunks button



The Cue Chunks button, when highlighted, play-enables the next Chunk in the Chunks list after the current playback Chunk reaches its End time and stops.

To begin playback of the next Chunk, press the Play button, or a remote control for the Play button.

The Chain Chunks button



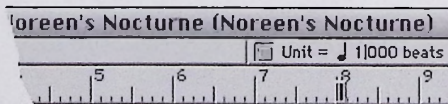
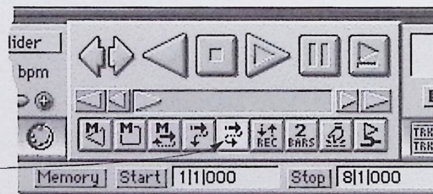
The Chain Chunks button, when highlighted, starts playback of the next Chunk in the list after the current playback Chunk reaches its End time. This is a simple way of automatically chaining Chunks in their Chunks list order.

Chaining with this button does not yield seamless transitions between Chunks. Use it for cueing situations where a brief pause between Chunks is acceptable or preferred. For seamless chaining, assemble Chunks in a Song window. For more information, please refer to the *Song window* chapter.

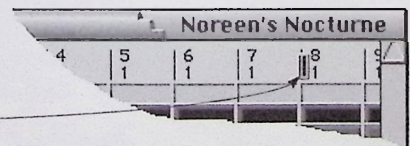
Viewing the Chunk End Time

When the Cue Chunks or Chain Chunks button is highlighted, the end time of the sequence is graphically displayed as a final barline in the time ruler of the Tracks Overview or any Graphic Editing window.

Chain Chunks (or Cue Chunks) button is activated.



A barline is displayed in all time rulers to indicate the end time of the sequence. This is the point at which it will stop before the next sequence will be cued.



The Skip Forward and Backwards buttons



The Status Strip

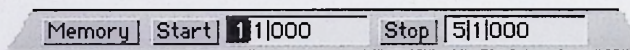
The Memory and Auto Record Bars

The Skip buttons enable the next or previous Chunk for playback. Clicking these buttons is similar to pressing the skip buttons on a typical compact disc player: Performer stops playback of the current Chunk and starts playback of the next or previous Chunk. Chaining Chunks in this manner does not yield seamless transitions between Chunks. To chain Chunks seamlessly, chain them inside a song as described in the *Song Window* chapter.

The Status Strip has three segments that display information. The left-hand segment displays the name of the file. The middle segment contains the Memory and Auto record bars, which contain locations for Memory functions and Auto-Record. The right-hand segment displays the currently play-enabled Chunk.

The Memory and Auto-Record bars appear in the Status Strip when you click one of the memory buttons or the Auto-Record button.

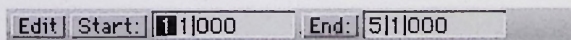
Clicking directly on the measure-time fields (measure|beat|tick) in either bar will highlight them for editing as shown below.



Click on the desired field and type in a number. The Tab key advances to the next field to the right. The Return key confirms the entry. It is important to remember that these bars are displayed only when their respective function is enabled. For example, the Auto-Record bar is only visible when Auto-Record is enabled. If both are enabled, both bars will appear in the Status Strip.

The Memory Bar

The Memory Bar displays the start and stop times for Auto-Stop, Auto-Rewind, and Memory-cycle (see above). To deactivate the Memory Bar, turn off the currently enabled Memory button by clicking it.



Each of the words in the Memory Bar can be clicked on as a shortcut for entering times:

Clicking on the word "Start" or "Stop" will load them with the current play location in the Counter.

Double-clicking on the word "Start" will load it with the start time of the current sequence.

Double-clicking on the word "Stop" will load it with the end time of the current sequence.

*Clicking on the word "Memory" will set both the Start and Stop times to the remembered times. Remembered times are Start and Stop times stored with the Remember Times command in the Basics menu. For more information, see *Remember Times* in the *Event List Window* chapter.*

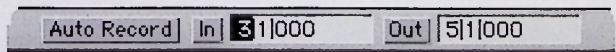
Double-clicking on the word "Memory" is a shortcut for double-clicking on both the Start and Stop times: it loads them with the start and end times of the current sequence.

The Rewind button works differently when the Memory Bar is visible: clicking on the Rewind button once will rewind to the Start time in the Memory Bar; clicking on it again will rewind to the beginning of the sequence.

Memory bar times can also be loaded by selecting the region graphically. See "Setting Memory-cycle points" on page 73.

The Auto Record Bar

The Auto Record Bar will appear when the Auto Record button is enabled. When it is visible, Auto Record is in effect.



Each of the words in the Auto Record Bar can be clicked on as a shortcut for entering times:

Clicking on the words "In" or "Out" will load them with the current play location in the Counter.

Macintosh keyboard controls

Double-clicking on the word "In" will load it with the start time of the current sequence.

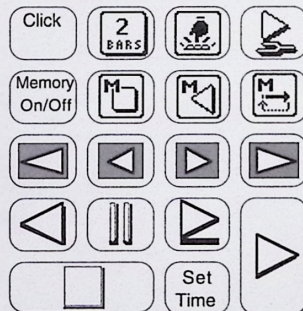
Double-clicking on the word "Out" will load it with the end time of the current sequence.

*Clicking on the words "Auto Record" will set both the In and Out times to the remembered times. For more information about remembered times, see the *Event List Window* chapter section on *Remember Times*.*

Double-clicking on the words "Auto Record" is a shortcut for double-clicking on both the In and Out times: it loads them with the start and end times of the current sequence.

Auto Record bar times can also be loaded by selecting the region graphically. See "Setting the punch-in and punch-out points graphically" on page 77.

The main Controls window functions can be operated from the numeric keypad on the Macintosh extended keyboard.

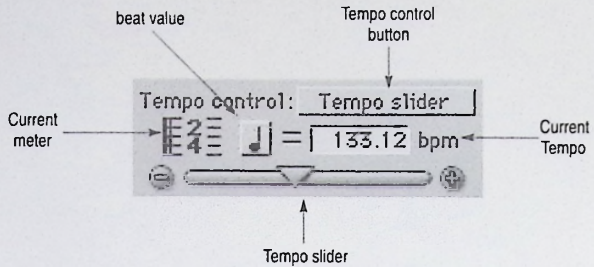


In addition, the space bar acts as a play/stop toggle. These key assignments are provided for your convenience. However, you can create your own customize key assignments using the Remote Controls window. Please refer to the chapter called *The Remote Controls Window* for more information.

The Metronome panel

The Tempo Control button

The Metronome panel displays the tempo and meter of the currently play-enabled Chunk (sequence or song).



Tempo can be controlled by one of three possible sources:

- The Tempo slider
- The Conductor track
- By remote control from an external MIDI controller, such as a modulation wheel

The Tempo Control button displays the current tempo source. Click it to change it. You can change the tempo source at any time, and the tempos you set in each mode are remembered. In addition, the tempo control settings saved with each Chunk.

Tempo slider

When the Tempo Control is set to Tempo Slider, you can change tempo by entering a value in the tempo box in the Metronome window or by dragging the slider with the mouse or by pressing the + and - buttons. Tempo is expressed in beats per minute (bpm). Any programmed tempo changes (the tempo map) are ignored. You control the tempo directly with the tempo box and slider. This mode is useful for Chunks with one constant tempo or for temporarily adjusting tempos when working on a Chunk.

Conductor Track

When the Tempo Control is set to Conductor Track, you cannot use the tempo box or slider to set the tempo. Instead, the tempo map in the Conductor track takes control of the Chunk. In this mode, the

tempo slider is merely an indicator of the current tempo; the plus/minus buttons become disabled and you cannot change the tempo or beat value directly.

To hear tempo changes that you create with the Change Tempo command or by using Tap tempo sync, set the Tempo Control to Conductor Track, where programmed tempo changes and tempo maps are stored.

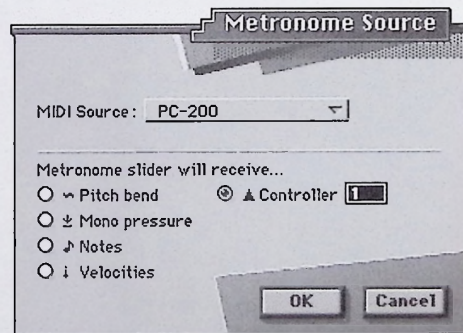
Remote control of the tempo

When the Tempo Control is set to *Remote Control*, the tempo slider can be controlled from an external MIDI source such as a modulation wheel on a MIDI keyboard, or any other source of continuous controller data.

To set up the Tempo slider for external MIDI control:

1. **Choose Remote Control from the Tempo Control pop-up menu.**
2. **Choose Set Remote Source from the Tempo Control pop-up menu.**

A dialog box appears.



3. **Select the MIDI device from which the external control data will be received from the pop-up menu provided.**
4. **Select which type of MIDI data will be used to control the slider.**

Modulation wheels send controller #1.

The current meter display

The beat value

The tempo slider

The current tempo

5. Click OK to confirm your choice or Cancel to withdraw the command.

The meter at the current location is displayed for your reference. To change meter, you must use the Change Meter command on the Change menu.

The beat value is the note duration that “gets the beat” in a given meter. In 4/4, for example, the quarter note usually gets the beat: in this case, the beat value is a quarter note. In 6/8, the beat generally falls on the first and fourth eighth notes in the measure, thus the dotted quarter is the beat value.

The beat value you set does not necessarily correspond to the value you set for the metronome click. The metronome click value is set when specifying the meter with the Change Meter command on the Change menu. For example, in 6/8 meter, you may set a tempo of an eighth note = 220, but, set the metronome click to a dotted quarter note (standard in 6/8 time). Quite often though, the beat value will be the same as the meter denominator (the lower number of the meter marking).

When the Tempo Control pop-up menu is set to *Tempo Slider*, the tempo slider is used to display and change the tempo. To change tempo, drag the triangular indicator along the slider: to the left decreases the tempo, to the right increases it. You can also use the plus/minus buttons at either end of the slider: the + (plus) button increases the tempo and the – (minus) button decreases it.

When the Tempo Control pop-up menu is set to *Conductor track*, the tempo slider serves only as an indicator of the current programmed tempo; it cannot be dragged with the mouse.

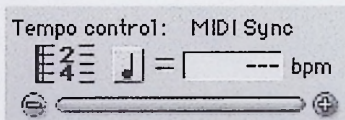
Tempos are displayed in beats per minute (bpm). The beat value can be any standard musical duration between a sixteenth and whole note. All beat values can be dotted. A dotted value is equivalent to one and a half times the value of the duration. (A dotted quarter note is equivalent to one and a half quarter notes, for example.) Tempos are displayed and entered with an accuracy of a hundredth of a beat per minute. This allows you to specify tempos with two numbers to the right of the decimal point, e.g. 104.78 beats per minute. In

Tempo Control during external synchronization

addition to providing you with a high degree of resolution, this also allows you to easily enter tempos that match standard frame click metronome values.

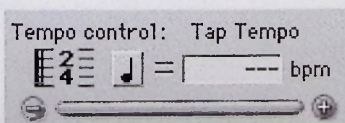
When the tempo slider is controlling tempo, you can enter the tempo directly into the Current tempo box. To change the tempo, click the current tempo box to edit the tempo. If necessary, click the current beat value to change it.

When Performer is slaved to external sync using the Standard MIDI beat clocks mode, the master device generates the tempo. The tempo slider acts solely as an indicator in this case: the master device (drum machine, a hardware sequencer, etc.) has complete control over Performer's tempo, and the tempo control displays the phrase *MIDI Sync* to remind you that the Tempo slider is disabled because tempos are being generated externally by the master device:



When synchronizing to time code (such as SMPTE) using the Indirect or Direct lock modes, Performer follows its own internal tempo. Set the desired tempo in the normal fashion, or set the Tempo Control pop-up menu to *Conductor track* to use a tempo map you have programmed into the Conductor track.

When synchronizing to Tap tempo sync, you control the tempo in real time by tapping (sending a MIDI event to Performer), using any MIDI controller. For details on creating a tempo map using Tap tempo sync, refer to the chapter *Receive Sync*. When you choose Tap tempo and check the Slave to external sync command in the Basics menu, the Tempo slider is disabled and it reminds you why:



The Counter

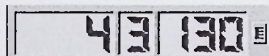
Performer automatically adjusts real time and frame locations when the current tempo is changed.

The Counter displays the current playback position in the currently play-enabled Chunk (sequence or song), expressed in three different forms: *measure time* (measure | beat | tick), *real time* (minutes:seconds.hundredths) and *frame time* (hours:minutes:seconds:frames). Two of these formats can be displayed at the same time: one as a main counter and the other as an auxiliary counter. These time standards are explained in detail in the next few sections.

You can edit the counter fields to change the current location. You can change which time formats are displayed by clicking the time format icons.

Measure Time

Measure time is the most musical of the time formats. Locations are displayed in standard measures and beats, with an additional unit called the tick. Unless you are doing film or video work, it is probably the only time representation you will need (though you may want to use real time for an objective measurement of the length of your sequence). The three units are separated by vertical bars. The example shown below shows measure 4, beat 3, tick 130.



Performer uses a resolution of 480 ticks per quarter note. Events can thus be recorded and played back with an accuracy of 1/480 of a quarter note.

Real Time

Real time is clock time, i.e. time expressed in minutes:seconds.hundredths of a second. Real time is useful to measure elapsed time for your sequence. By default, the sequence begins at time 0:00.00; this can be changed with the Set Sequence Start command described later in this chapter.



Frame Time

Frame time is a visual display of SMPTE (Society of Motion Picture and Television Engineers) time code. It is generally used in film and video work, but is increasingly used for synchronization in audio production. It is displayed similarly to real time, in hours, minutes, seconds, and frames. Frames are subdivisions of a second. The first frame number in a second is zero. Performer supports four frame formats: 24 frames per second (fps), 25 fps, 30 fps, and 30 drop frame.



When synchronizing to an external time code source, the counter will always display the same frame time that is being received from the external source. You may specify the SMPTE location at which the first measure of the sequence or song starts.

Using the Counter to change the current playback location

The *current playback location* is the position where the Chunk will next play or record from. You can edit the counter fields to change the current location.

You can change the current location in the currently play-enabled Chunk (sequence or song) by editing the counter numbers. This can be done while the Chunk is stopped or playing. If you edit the counter while the Chunk is playing, it will continue to play while you enter the values and will cue to the new location after you confirm your edit. To edit the counter:

1. Click on the time value you wish to change.

The number field will highlight.

2. Enter the number you want.

You can only enter valid values (e.g. you can't enter 27 frames if you've chosen a 25-frame standard). Use the Tab key to move from one value field to the next. The decimal point on the keypad can also be used to cycle through fields. If you make a mistake in entering a value, press the Backspace key or click on the field again and re-enter the value.

3. Click outside the highlighted number field or hit the Return key.

Using the decimal key or Command-T to edit SMPTE main counter

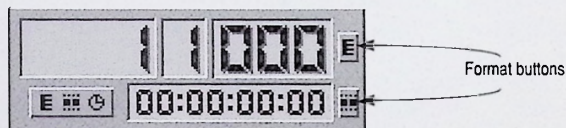
Setting the Counter Display

The decimal key on the Mac keypad will now highlight the main counter, even if it is SMPTE time or Real time.

There is a shortcut for setting the measure time: using command-T or the decimal point on the keypad will select the measure field and set the beat field to 1 and the tick field to 000. You may then enter the number of the measure you want to move to. As soon as you click outside the highlighted field or press the Return key, the specified value will be entered.

These keys will always edit main the counter, even when it is set to SMPTE time or Real time.

To change which time format is shown in the Main or Auxiliary Counter, click the time format button in the right-hand side of the Counter.



The Counter displays dashes when no sequence or song is play-enabled in the file. To display numbers, play-enable a Chunk in the Chunks window.

During playback, the measure time counter is updated each time a metronome click would occur. If the click value is set to a half note in 4/4 time, only beats 1 and 3 will display in each measure. The click value can be set with the Change Meter command on the Change menu.

Setting the start time

The start time of the sequence is what you see in the counter when you rewind to the very beginning. Normally, the default start time for a sequence or song is measure time 111000, real time 0:00.00 and frame time 0:00:00:00.

You can, however, use the Start Time button to change these start times to anything you want.



Start time button

If you are synchronizing Performer to SMPTE time code, you'll need to set the SMPTE start time according to SMPTE frame at which you want the Performer to begin playing. For example, you may want the downbeat of the first measure in the sequence to begin playing when the time code reaches 1:00:20:00.

The following are other examples of situations in which you might want to change the sequence start time:

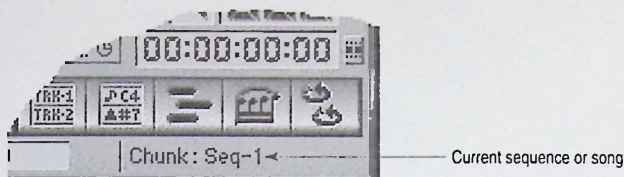
- You would like to create one or more pickup measures before measure 1 (111000).
- Your sequence should begin with a measure time other than measure 1 to match its location in a song. (For more information, see "Matching chunk start times with their location in a song" on page 230.)

The start times you enter for measure and real time are arbitrary and only affect the display of time locations. The SMPTE time code start time, however, determines the frame at which the sequence will actually begin playing while Performer is slaved to external time code.

To set the start times of a sequence or song:

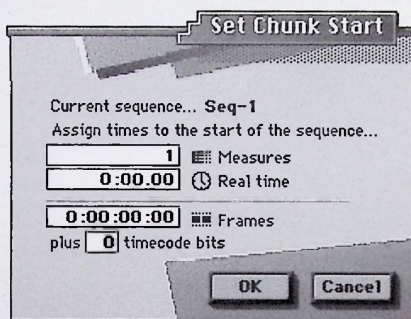
- 1. If you have more than one sequence or song in the file, make sure it is the currently play-enabled chunk.**

To do so, look at the current chunk indicator in the main control panel. If you need to switch sequences, use the Skip buttons.



2. Click the Start Time button in the main counter.

A dialog box appears. The current Chunk name is displayed near the top of the dialog box.



3. Click on the value(s) you wish to change.
4. Enter the new value(s).

You may enter a value for each of the three time formats. Measure values range from -9999 to 9999. Real time ranges from 0:00.00 to 59:59.99. Frame time ranges from 0:00:00:00 to 23:59:59:30.

5. Click on OK to confirm your choice or Cancel to cancel it.

Using SMPTE timecode bits

In addition to the start frame, you may offset the SMPTE start time by a number of bits. There are 80 bits per frame. Although Performer does not have single bit time resolution, it does offer sub-frame time resolution. Use the bit offset to finely adjust the start time.

Setting the SMPTE frame rate

Creating pickup measures before 1|1|000

The SMPTE frame rate can be set with Receive Sync command in the Basics menu. See "Slaving to SMPTE with MTC, DTL, or DTLc" on page 609.

Normally, when you rewind Performer back to the beginning of the sequence, the measure counter reads 1|1|000. But sometimes you may have several pickup beats (or measures) in your music, and you may still want the music at measure 1 to remain at measure 1. If so, you can create as many pickup measures before 1|1|000 as you need.

To create a pickup measure:

- 1. As described in the previous section, set the measure start time of the sequence to 0 to create 1 pickup measure.**

If you need two pickup measures, set the Measure start time to -1. If you need 4 bars, set it to -3.

- 2. Now, when you press Rewind back to the beginning of the sequence, the Counter window will read 0|1|000.**

If you set up two or four pickup measures instead of only one, the counter would read -1|1|000 or -3|1|000 respectively.

- 3. If you already had data recorded in the sequence, shift the data back to its original location.**

When you change the Measure start time, data that used to be at 1|1|000 is now at 0|1|000, and so on. All data has changed to match the new start time. To restore all data to its original position before you changed the start time, use the Shift command to shift it back to where it was before.

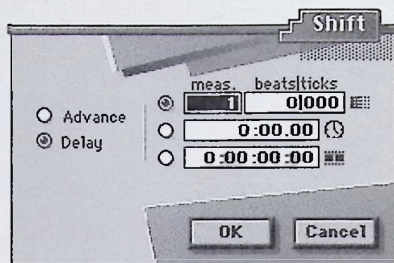
- 4. Highlight all track names in the Tracks window and double-click the word "Edit" in the Edit bar.**

This selects the entire sequence.

- 5. Choose Shift from the Edit menu.**

6. Choose the Delay option and type in the number of pickup measures that you previously added.

If you added 1 pickup measure by setting the start time to 0111000, shift by 1 measure here.



7. Click OK.

You have now successfully restored all data back to its original location before changing the measure start time, and you also have several empty pickup measures in which to record.

The accuracy of the counter display

Performer's first priority is to keep up with the flow of MIDI data. If it encounters a great deal of data, it selectively ignores its graphic display until the microprocessor load decreases. This may keep the counters from updating and they may skip beats during these times. This is Performer's way of keeping up, and does not necessarily mean that MIDI data is being transmitted inaccurately.

A side effect of this is that the counter may not always be accurate. It should therefore not be used as a metronome. In general, the counter display should not be used as a visual indication of tempo. Use the Flash on the Basics menu instead.

Controlling how often the counter updates

During playback, the measure time counter is updated each time a metronome click would occur. For example, if the click value of the current meter in the sequence is set to a half note in 4/4 time, only beats 1 and 3 will display in each measure. The click value can be set with the Change Meter command on the Change menu.

Negative numbers in the counter display

When using an external sync source, Performer may run for a little while before the sequence actually starts. During this time, you may see negative bar numbers. These increase in value (towards zero) until the start measure is reached.



Chapter 6 *The Remote Controls Window*

The Remote Controls window lets you access all of Performer's transport functions, such as play, stop, rewind, and so on from a MIDI controller. For example, a note value of C0 could operate the Stop button in the Controls window; controller 64 On could operate the Skip Forward button. In addition, each Performer function has a reassignable Macintosh keyboard equivalent.

The Remote Controls window also allows you to cue sequence and song Chunks for playback from your MIDI controller. Each Chunk in the file appears as a Function in the Remote Control window with a MIDI and Macintosh key to play-enable that Chunk.

Quick Reference

	FUNCTION	EVENT	SOURCE	CH	MAC KEY
Remote Master	<input type="checkbox"/> Remote Master		any	any	Opt - Esc
	<input checked="" type="checkbox"/> Cycle Rec. Controls	↓EbO i	any	any	Opt [-]
	<input checked="" type="checkbox"/> Cycle On/Off	↓CO i	any	any	[-]
	<input checked="" type="checkbox"/> Spot Erase	↓DO i	any	any	
Group Master control	<input checked="" type="checkbox"/> Transport Controls	↓F#O i	any	any	Tab
	<input checked="" type="checkbox"/> Play/Stop toggle	↓EO i	any	any	Spacebar
	<input checked="" type="checkbox"/> Play	↓FO i	any	any	[Enter]
	<input checked="" type="checkbox"/> Stop	↓GO i	any	any	[0]
Individual control	<input checked="" type="checkbox"/> Pause	↓AO i	any	any	[2]
	<input checked="" type="checkbox"/> Rewind	↓BO i	any	any	[1]
	<input checked="" type="checkbox"/> Record	↓CI i	any	any	[3]
	<input checked="" type="checkbox"/> Auto Record		any	any	Opt [3]
	<input checked="" type="checkbox"/> Memory Stop		any	any	[8]
	<input checked="" type="checkbox"/> Memory Rewind		any	any	[9]
	<input checked="" type="checkbox"/> Count Off		any	any	[=]
	<input checked="" type="checkbox"/> Wait		any	any	[/]
	<input checked="" type="checkbox"/> Overdub		any	any	[*]
	<input checked="" type="checkbox"/> Slow Forward		any	any	[6]
	<input checked="" type="checkbox"/> Fast Forward		any	any	[+]
	<input checked="" type="checkbox"/> Slow Reverse		any	any	[5]
	<input checked="" type="checkbox"/> Fast Reverse		any	any	[4]
	<input checked="" type="checkbox"/> Click On/Off		any	any	[Clear]
	<input checked="" type="checkbox"/> Memory On/Off		any	any	[7]
	<input checked="" type="checkbox"/> Set Times		any	any	[.]
	<input checked="" type="checkbox"/> Cue Chunks		any	any	Opt - q
	<input checked="" type="checkbox"/> Chain Chunks		any	any	Opt - c
	<input checked="" type="checkbox"/> Skip Forward		any	any	Opt - f
	<input checked="" type="checkbox"/> Skip Backward		any	any	Opt - b
	<input checked="" type="checkbox"/> Next Record Track		any	any	i
	<input checked="" type="checkbox"/> Prev. Record Track		any	any	↑
Master status icon	<input checked="" type="checkbox"/> Step Record Controls	↓AbO i	any	any	Lock - Return
	<input checked="" type="checkbox"/> Backstep		any	any	Lock [0]
	<input checked="" type="checkbox"/> Step		any	any	Lock [Enter]
	<input checked="" type="checkbox"/> Beat		any	any	Lock [+]
	<input checked="" type="checkbox"/> Measure		any	any	Lock [-]
	<input checked="" type="checkbox"/> Triplet On/Off		any	any	Lock [/]
	<input checked="" type="checkbox"/> 128th note		any	any	Lock [9]
	<input checked="" type="checkbox"/> 64th note		any	any	Lock [8]

The Remote Controls window is opened by choosing it from the Windows menu. For your convenience, new Performer files contain both the Transport and Chunk Select controls with default MIDI and Macintosh key assignments ready to use.

Remote Master: Enables or disables all MIDI Remote Controls and Master Controls. It remains at the top of the list and cannot be moved or deleted.

The Remote Controls Window Mini-menu

Group Master Control: Enables or disables an entire group of MIDI Remote Controls with a single MIDI or Macintosh keystroke. Master controls can be moved, added, deleted, and renamed.

Individual Control: Displays a specific Performer function, and the MIDI event and Macintosh key assigned to trigger the function. An individual control is available when the Master above it is On; if a control has no Master, it is always on.

Master Control Status Icon: Indicates the Master's current status, either On or Off. The current mode is indicated by the text and color of the status icon: *On* and highlighted, or *Off* and white.

Function: Defines the Performer function to be triggered.

Event: Defines the MIDI event that will trigger the Performer function. To edit the event, click the field and play the new event, then press the Return, Enter, or arrow keys.

MIDI Controller: This is the MIDI device in your studio from which you would like to trigger the remote controls. A pop-up menu of devices is provided in this column by FreeMIDI.

Mac Key: Defines the Macintosh key (or keys) that will trigger the Performer function. To change the key, click it, press the new key(s), and click outside the box to confirm your choice.

The Remote Controls window mini-menu contains the following items.

Add Defaults: Adds the Transport Master and group members, and the Chunk Select Master with a control for each Chunk in the file.

Add Master: Adds a Master control to the bottom of the functions list. This new Master can be moved and assigned MIDI and Macintosh triggers.

Duplicate: Add a duplicate of the selected item(s) to the bottom of the Remote Controls function list.

Delete: Deletes the highlighted Masters and controls. Select functions by clicking them. Select contiguous functions by dragging. Select discontinuous functions by shift-clicking.

Basics

The Remote Controls window lists each Performer function along with its assignments, and allows you to edit these assignments to completely customize your Remote Controls. Further, you can load the assignments you make into any other Performer file, or even make them part of every new file using the Save As 'New' Template command.

There are two types of controls: individual, for example Play or Stop, and Master, such as the Transport Controls Master. Individual controls are grouped under Master controls, which enable and disable their group when toggled with a MIDI event or a key on your Macintosh keyboard. Individual controls actually operate Performer functions, whereas Master controls make a group of individual controls available or unavailable.

Master Controls

Every new Performer file automatically contains several Master controls: the Remote Master, the Transport Controls Master, the Step Record Controls Master, and the Chunk Select Master. Each one serves as a toggle, rendering its sub-group of controls available or unavailable. To customize Remote Controls, you can add your own Masters and change their assignments whenever you wish.

A Master's control group is displayed as an indented list beneath that Master. Each indented control can be moved into another indented group, thereby redefining which Master will affect it, by simply dragging the control's icon up or down in the window. Likewise a Master can be dragged to a different position to redefine its control group.

At any given time, a Master control is either On or Off. Correspondingly, the Master's status icon displays *On* and is highlighted, or *Off* and is dark.

On and inverted means that the functions under that Master are available. When the Master icon is **Off** and highlighted, the MIDI controls of the group under that Master are unavailable; each function's trigger acts as a normal MIDI event. Macintosh controls are always available, regardless of the On/Off status.

The combinations of Master status and individual control status make Performer's Remote Controls extremely flexible. Here are some typical Remote Controls setups:

Enabling and Disabling Remote Controls

Changing a Control's Remote Assignments

- The controls occupy an infrequently used range of your MIDI controller, and are always on. You don't typically use this octave in your sequences.
- The controls occupy several keys of a MIDI controller transmitting on one channel, and on another channel you have a second controller for recording.
- The controls occupy the entire span of keys on your controller, and you can toggle them on and off with a single key at the very top of the keyboard. The entire keyboard can switch instantly between remote controls and MIDI notes.

You can turn on and off the MIDI Remote Controls in the following ways:

- Press option-escape (esc)
- Click the Remote Master icon in the Remote Controls window
- Play the MIDI event you have assigned to it

Performer comes with a pre-defined set of Remote Controls for the Transport and Chunk Select functions. You might find these defaults suitable for your working style. But should you wish to completely customize your Remote Controls, Performer makes it easy.

To change the event assignments of a Performer function or Chunk select control:

1. Choose *Remote Controls* from the Windows menu.

The Remote Controls window opens or, if already open, becomes active.

2. Click the MIDI assignment that you wish to change.

The field pops up. If you wish to enter a note-off event, you must play and hold the note, then click the assignment.

3. **Play the MIDI event on the instrument you plan to use as the remote control device.**

Any MIDI event from any connected MIDI controller is suitable, although notes and switch controllers are easiest to use. The highlighted field updates to display the event you just played.

4. **Type Return or click anywhere outside the pop-up box to confirm the change.**

Typing the up or down arrow confirms the change and pops up the previous or next event, respectively.

5. **Choose the MIDI device and channel that you will be triggering the remote from.**

6. **Click the Macintosh keyboard equivalent that you wish to change.**

The field highlights.

7. **Type the new key combination on your Macintosh keyboard.**

Any key or combination of normal and modifier keys is suitable.

8. **Click anywhere else on the screen.**

Because of its unique function, this pop-up box cannot be confirmed using the Enter or Return key. The box can be exited only by clicking and cannot be canceled.

Disabling a Single Control

To turn off an individual control click the MIDI assignment for a remote control and then backspace in the pop-up box.

This is especially helpful with the Remote Master to avoid enabling the remote controls by accident over MIDI. Also, having lots of MIDI assignments in the Remote Controls window can sometimes cause delays when using Patch Thru. If you delete unused MIDI assignments from remote controls, you can prevent delays.

Creating Custom Control Groups

Performer lets you add your own Master controls, which you can use to toggle on and off whole groups of individual controls. Just like the default Masters that Performer provides (Remote, Transport, and Chunk Select), the Master you add governs all controls indented beneath it. You can drag both Master and individual controls up or down in the Remote Controls window to determine their grouping.

To add a new Master control:

1. **Click anywhere in the Remote Controls window to activate it.**
2. **Choose *Add Master* from the Remote Controls window mini-menu.**

The added Master control appears at the bottom of the Function list.

3. **Option-click the name of the added Master to change it.**

Type Return to confirm the change.

4. **Click the Event field of the new Master to assign a MIDI event.**

The field pops up.

5. **Assign MIDI and Macintosh key events to the new Master.**

Refer to the section called *Changing a control's remote assignments* for details.

6. **As mentioned, the position of a Master determines what group of controls it will affect. Since a newly added Master appears at the bottom of the Functions list, you will need to reposition the added Master using its icon. You can also drag individual controls from Master to Master.**

To reposition a Master or individual control:

1. **Drag the control's icon to the desired group.**
2. **Release a Master just above the group; release an individual control beneath the Master that should control it.**

An individual control dragged above the first group's Master will be controlled by the Remote Master.

Deleting Controls

To delete a control or group of controls:

1. **Click the name of the control to select it.**

Drag to select several contiguous controls; shift-click and shift-drag to select discontinuous controls.

Restoring Deleted Controls

Loading Remote Controls Assignments From Another File

2. Choose *Delete* from the Remote Controls window mini-menu.

The selected controls disappear from the list. Their MIDI and Macintosh keyboard assignments cannot be retrieved.

In the event that you delete controls during a session and then decide you'd like to retrieve them, Performer provides a quick mini-menu command to regenerate both sets of default controls. Choosing *Add Defaults* places the Transport and Chunk controls at the bottom of the functions list; you can arrange, reassign, and delete them to your satisfaction.

The MIDI and Macintosh key event assignments of controls that you delete are not held in memory. Once you delete a control, restoring it using *Add Defaults* will produce the default controls with the default assignments. If you wish to save your custom event assignments, just make sure they are present when you close the file. The next time you open the file, your customized controls will be intact.

Remote Controls assignments from one Performer file can be imported into any other Performer file using the Load command, found in the File menu. This means you can set up the Controls the way you like them, once, and they'll be available for importing into any of your files.

The Remote Controls assignments that you make in a file are automatically saved as part of that file. The Load dialog box, however, enables you to extract assignments from an unopened file, then load them into the file in which you are working.

To load Remote Controls assignments into an open file:

1. Choose *Load* from the File menu.

The standard Macintosh Open dialog box appears.

2. Click the file containing the assignments you wish to load, then click *Open*.

Alternately, you can double-click the file name. Performer's Load dialog box appears, displaying the file name at top.

3. Choose the *Load Remote Controls* option.

Remote Controls Hints

Customizing Controls in New Files

Spot-erase

4. **Optional: If you wish to load any Chunks from the selected file, choose the *Load Chunks* option and the *Data or Link* sub-option.**

If you wish to load more than one Chunk, you can drag to select contiguous Chunks and shift-click to select discontinuous Chunks. Deselecting this option loads only the file's Remote Controls assignments.

5. **Click OK to confirm your choice(s) or Cancel to withdraw the Load command.**

Clicking OK causes the selected file's Remote Controls assignments, as well as any selected Chunks, to be loaded into the open file. The imported assignments appear at the bottom of the Remote Controls window.

Performer has a default New file format that contains the Remote Master, the Transport Controls Master and functions, and the Chunk Select Master and individual functions. However, the *Save as 'New' Template* command in the File menu lets you define Performer's New file as you like.

To customize your New files:

1. **Configure Performer's windows, their contents, and any other features as you find most useful.**

This file will be your template source file: Performer will remember your exact track setup and layout as well as many other features. MIDI and Conductor track data will not be included in the New template.

2. **Choose *Save as 'New' Template* from the File menu.**
3. **Click OK to confirm the command, Cancel to withdraw it.**

If you confirm the command, the New template of the open copy of Performer is redefined based on the current file.

Performer's spot-erase feature consists of the spot-erase remote control. Spot-erasing works like most conventional drum machines: you hold down the spot-erase key and then hold down the pitch of the note(s) you want to erase.

To spot-erase:

1. Start playback or overdub recording.

You can spot-erase while playing or overdub recording. You can spot-erase while using memory-cycle and while looping.

2. Record-enable the track in which you want to spot-erase.

3. Hold down the tilde key (`) and, while holding it down, hold down the notes you want to erase.

If you like, you can reassign spot-erase to a different key. Alternately, you can hold down the spot-erase MIDI remote, which is D0 (D-zero). Notice that you can spot-erase several notes at the same time—as many as you can manage, in fact.

4. As Performer continues to play (or overdub record), keep holding down the note(s) you want to erase for as long as you want to erase them.

If you want, you can release the spot erase key, even while you continue to hold down the notes you are erasing. The spot-erase key only needs to be held down when you first hold down the pitch(es) you want to erase. Once you've held down a pitch, you can release the spot-erase key.

5. Release the key(s) when you want to finish spot-erasing.

You can freely “punch-in” and out of spot-erase mode. Spot-erase is undoable.

Notice that you can spot-erase directly from your MIDI controller using the MIDI event assignment for it. If you don't normally use Performer's Remote Controls feature, you can still use spot-erase without using any other remote controls because spot erase has its own group master. You can even trigger the spot erase using a foot switch, a data slider or wheel on your MIDI controller, or anything that can send MIDI data. That way, you can configure spot-erase as conveniently as possible.

Switching MIDI devices, channels and patches

The Sound Selection group of remote controls lets you choose the next or previous device, MIDI channel, or default patch for the currently selected track. If no track is selected, these commands affect

the currently record-enabled track. Along with the “record next/previous track” remote, you can easily change tracks, devices, channels and sounds, all from your controller keyboard while recording.

ON	Sound Selection	↓Bb0 i	any	any	%% Shift Opt - i
⏮	Next Device		any	any	Shift - i
⏭	Previous Device		any	any	Shift - f
⏮	Next Channel		any	any	Opt - f
⏭	Previous Channel		any	any	Opt - i
⏮	Next Patch		any	any	%% - f
⏭	Previous Patch		any	any	%% - i

Creating Remote Control Macros

Several commands can be triggered in succession with one keystroke by assigning them to the same MIDI event. For example, you can create the following three-step sequence of remote controls: Stop, Chunk select, and Play. If you place them in that order in the Remote Controls List and assign them to the same key, Performer will execute the topmost control first. The current sequence will stop, and the specified Chunk will cue up and begin playing—all with one keystroke!

Similarly, you can assign all of your Master controls to the same MIDI or Mac key event — that event now turns on and off your MIDI Remote Controls.

Remote Chunk Cueing with MIDI Song Select Messages

In addition to Chunk select Remote Controls, Performer also allows you to cue Chunks for playback by sending a Song Select message from a MIDI controller. The Chunks window column *S#* displays the Song Select number that, when received, will cue the corresponding Chunk for playback. If a Chunk has no Song number assigned, the *S#* column displays a single dash (-).

Most hardware sequencers and some MIDI keyboard controllers can send and receive Song Select messages. Simply send a Song Select message as instructed in that module's documentation. If the open file contains a Chunk assigned to the Song number in the message, that Chunk will be play-enabled. If more than one Chunk has the same Song number assigned, the one highest in the Chunks list will be cued.

When used in combination with the Chunk Chaining buttons in the Controls window, a Song Select message cues the corresponding Chunk to be play-enabled or played back. The information bar in the Consolidated Control panel indicates which Chunk has been cued.

Chapter 7 *Playback*

When Performer is “playing” music, it is sending out stored MIDI data at specified times to MIDI-equipped instruments. These instruments use the data as instructions for when to turn notes on and off, etc. Conceptually, it is similar to a player piano which uses a set of recorded data (the piano roll) to control its “instrument” (the piano mechanism). The synthesizer or sound module produces the actual sound, and Performer tells it when and how to do so.

To play a sequence or a song:

1. Open a Performer file.

Choose Open from the File menu. A dialog box will appear. Select the file you wish to open by clicking on it and pressing the Open button.

2. Choose *Chunks* from the Windows menu.

The Chunks window will open or, if it is already open, come to the front.

3. Play-enable the Chunk you wish to play back.

Since a file can contain several Chunks (sequences or songs), you must play-enable the one you want.

4. Set the location from which you want playback to begin.

To simply rewind to the beginning of the sequence, click the Rewind button. To choose a general location, drag the Position Bar below the main transport controls; to start at a specific location other than the beginning, type in the location in the main counter. Or double-click at the desired playback location inside the time ruler in a Graphic Editing window. You can double-click in the Tracks overview time ruler as well.

5. Play-enable the tracks you wish to play back.

If you are playing a sequence, double-click its name to open its Tracks window and click the Play-enable button to the left of the track name(s) you wish to hear. If the track is not play enabled, you will hear nothing from the track. If you are playing a song, play-enable the tracks in each sequence that the song contains.

6. Choose a MIDI playback device for each track.

A track can be assigned to one channel on a single MIDI device. It can also be assigned to several different MIDI devices simultaneously. Devices can be set by clicking on the play destination in the Tracks window next to the track name. A pop-up menu appears. The devices in the list are provided by FreeMIDI. If a device you want is not present in the list, use the FreeMIDI Setup program to add the device to your MIDI configuration.

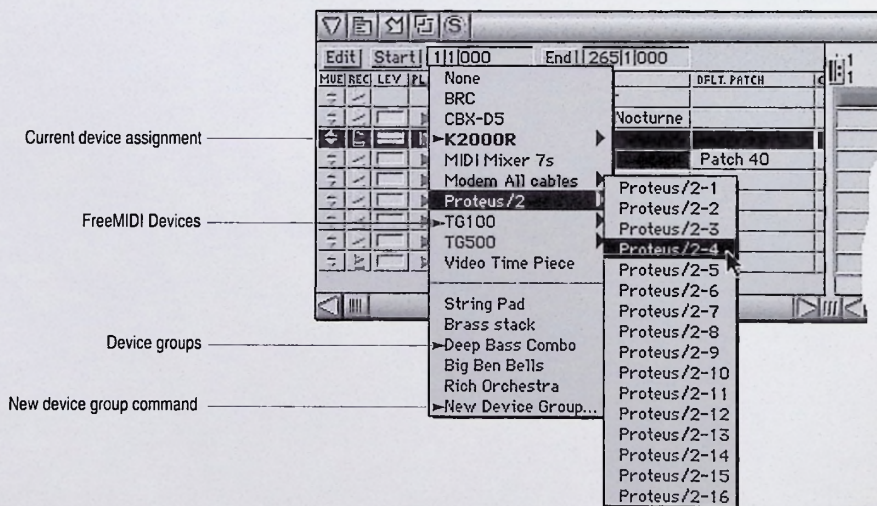
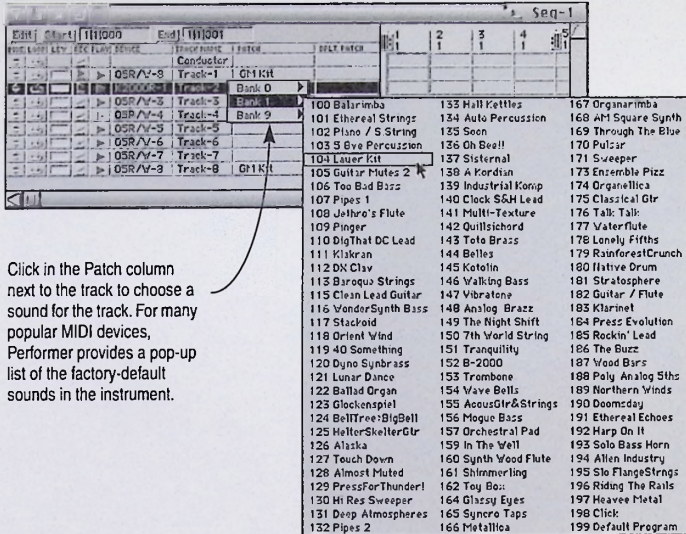


Figure 7-1: Selecting a playback device from the pop-up menu in the Device column next to the track name.

You can change a track's playback channel or Device at any time—even while the sequence is playing back.

7. Choose a sound from the track's patch list by clicking in the Patch column next to the track name as shown below.



Patch 0	Patch 32	Patch 64	Patch 96
Patch 1	Patch 33	Patch 65	Patch 97
Patch 2	Patch 34	Patch 66	Patch 98
Patch 3	Patch 35	Patch 67	Patch 99
Patch 4	Patch 36	Patch 68	Patch 100
Patch 5	Patch 37	Patch 69	Patch 101
Patch 6	Patch 38	Patch 70	Patch 102
Patch 7	Patch 39	Patch 71	Patch 103
Patch 8	Patch 40	Patch 72	Patch 104
Patch 9	Patch 41	Patch 73	Patch 105
Patch 10	Patch 42	Patch 74	Patch 106
Patch 11	Patch 43	Patch 75	Patch 107
Patch 12	Patch 44	Patch 76	Patch 108
Patch 13	Patch 45	Patch 77	Patch 109
Patch 14	Patch 46	Patch 78	Patch 110
Patch 15	Patch 47	Patch 79	Patch 111
Patch 16	Patch 48	Patch 80	Patch 112
Patch 17	Patch 49	Patch 81	Patch 113
Patch 18	Patch 50	Patch 82	Patch 114
Patch 19	Patch 51	Patch 83	Patch 115
Patch 20	Patch 52	Patch 84	Patch 116
Patch 21	Patch 53	Patch 85	Patch 117
Patch 22	Patch 54	Patch 86	Patch 118
Patch 23	Patch 55	Patch 87	Patch 119
Patch 24	Patch 56	Patch 88	Patch 120
Patch 25	Patch 57	Patch 89	Patch 121
Patch 26	Patch 58	Patch 90	Patch 122
Patch 27	Patch 59	Patch 91	Patch 123
Patch 28	Patch 60	Patch 92	Patch 124
Patch 29	Patch 61	Patch 93	Patch 125
Patch 30	Patch 62	Patch 94	Patch 126
Patch 31	Patch 63	Patch 95	Patch 127

If you see generic names like this, you can go ahead and use them anyway, as long as you know what sounds correspond with each patch change number. Or you can modify the list so that it shows the actual sound names. For details, see chapter 48, "Using PatchList Manager" (page 725).

8. Press the Play button.

The sequence will begin to play. The Counter advances.

9. When finished playing back, press the Stop button.

When the sequence is finished, Performer will keep playing indefinitely until you press the Stop button. (This doesn't endanger your sequence, though it is best to stop playback when the sequence is done.)

Choosing a device for playback

To choose a playback device, choose it from the pop-up menu provided in the *Device* column next to the track name as shown in Figure 7-1 on page 110. You can also do so from your Mac keyboard. See "Switching MIDI devices, channels and patches" on page 106.

Choosing multiple playback devices for a single track

To assign a track to multiple playback devices, you need to assign it to a device group. You can either choose an existing device group as shown in Figure 7-1 on page 110, or create a new one by choosing *New Device Group*, which opens the Device Groups window (described in the next section). A device group can contain up to ten MIDI channels from any combination of devices in your MIDI setup. To create a device group, read the next section.

☛ Hint: if a track is currently assigned to a device group, and you want to make changes to the device group, option-click the device group name in the Tracks window next to the track and the Device Groups window will automatically open and scroll to the group. You can then make whatever changes you want.

Creating a device group

A *device group* is a collection of individual FreeMIDI devices—or more specifically, *MIDI channels* from FreeMIDI devices. For example, a device group called *Massive String Pad* might include the following device channels: Kurzweil K2000 channel 1, Korg 01/W channel 5, Akai S1000 channel 3, and Proteus/2 channel 13. As a result, the device group produces a combination of the sounds currently playing on each of these MIDI channels. A device group can contain up to 10 MIDI channels.

Devices groups appear in the same pop-up list as all the rest of your FreeMIDI configuration devices, and they are used to assign multiple MIDI channels to a single track in the Tracks window.

To create a device group:

1. **Choose Device Groups from the Windows menu to open the Device Groups window.**

Click this expand/
compress icon to
toggle the check box
display shown here.

Click the check boxes
to quickly add MIDI
channels to the
device group.

Click the expand/compress
icon again to return to the
normal display, which allows
you to a default patch for
each channel.

Device Groups		
GROUPS	DELT PATCH	COMMENT
String Pad K2000R-2 K2000R-4 Proteus/2-2 Proteus/2-7 ↳	Piano&SloStrings Touch StringOrch Arco Violins Solo Chamber	
Brass stack K2000R-1 K2000R-3 Proteus/2-1 Proteus/2-11 TG100-3 ↳	Trumpet&Bone Toto Brass Bright Brass Back Brass Muted Trumpet	
Deep Bass Combo BRC CBX-D5 K2000R MIDI Mixer 7s Modem All cables Proteus/2 TG100 TG500 Video Time Piece	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Big Ben Bells Proteus/2-1 TG100-1 K2000R-1 ↳	Tubular Bells SplitBell Bella Voce	

2. Choose Add Device Group from the mini-menu.

If you would like to add more than one at a time, hold down the option key while selecting the command from the mini-menu.

Here is a summary what you can do in this window:

To do this:

Do this:

Change the device group name	Option-click the name to pop-edit it.
Add a device to the group	Click the pop-up menu arrow beneath the device group name and choose the desired device and MIDI channel from the pop-up menu.
Add several devices quickly	Click the Expand/Compress icon below the device group name to open up a display of all the devices in you studio. Then click the check boxes that corresponds to the MIDI channels you want to add to the group.
Close the check box display	Click the Expand/Compress icon below the device group name again.
Remove a device	Click the device and choose None from the pop-up menu.
Set a default patch for a device	If the device is currently expanded, close it first by clicking the Expand/Compress icon below the device group name. Then click in the default patch column to the right of the device and choose the desired patch from the pop-up menu.
Clear a default patch	Click the device name to select it and choose Clear Default Patch from the mini-menu.
Remove a device or device group from the list	Click the name to select it and choose Delete from the mini-menu.
Duplicate a device group	Click the name to select it and choose Duplicate from the mini-menu.

Changing your playback device list

Performer relies on FreeMIDI for an up-to-date list of the MIDI devices connected to your Macintosh. If a device is connected to the MIDI OUT of your MIDI interface, and the connection is accurately

Editing during playback

reflected in your FreeMIDI configuration, then the device shows up in the pop-up list with the same name it has been given in FreeMIDI. To make any changes to the playback device list, choose Edit FreeMIDI Configuration from the Basics menu. This command automatically opens FreeMIDI Setup, which lets you make changes to your device configuration.

Many of Performer's features, such as windows, dialog boxes, edit region selection, edit commands, and other features can be used during playback. For example, you can open another window or use the Transpose command while the music is playing back; you do not have to press the stop button beforehand. So, the next time you are listening to your music and would like to make a change, don't reach for the stop button. Just execute the command while the music is playing.

Here are some examples of things you can do during playback:

- Select a region for editing (in an Event List, Tracks Window, etc.)
- Edit a region with the Edit or Region menu commands
- Rearrange Chunks in the Song window
- Cut, copy, drag, option-drag (copy), etc. notes and data in Graphic Editing and QuickScribe notation windows
- Reassign the playback channel for a track
- Add, delete, rename, or reposition a track
- Access a mini-menu command such as Set View Filter

During playback and recording, the Counter and other displays may become irregular and seem to skip beats. This is due to Performer's primary obligation which is to receive and output MIDI data on time. Performer may have to devote all of the computer's resources towards this end and thus may not be able to keep the screen display completely smooth and current. The click and flash will provide an accurate determination of the tempo. In addition, editing commands may sometimes take longer due to the amount of processor time required to deal playback.

Soloing tracks

Looping playback

Event Chasing

Enabling Event Chasing

Some features, because of their nature, cannot be accessed during playback. These features are either greyed out (unaccessible) during playback or will have no effect unless you press the Stop button before using them. Examples are:

- Using the MIDI Interface dialog box
- Save or close a file

Using Solo allows you to easily select a subgroup of tracks to be heard during playback. This allows you to focus your attention on one or more tracks without disrupting playback in any way. The solo tracks group can be changed during playback, making it possible to hear many combinations of tracks without having to stop playback. The procedure for soloing tracks is described in detail in *The Tracks Window* chapter.

Playback of the entire sequence can be looped seamlessly between any two points. For information see “The Memory-cycle button” on page 71.

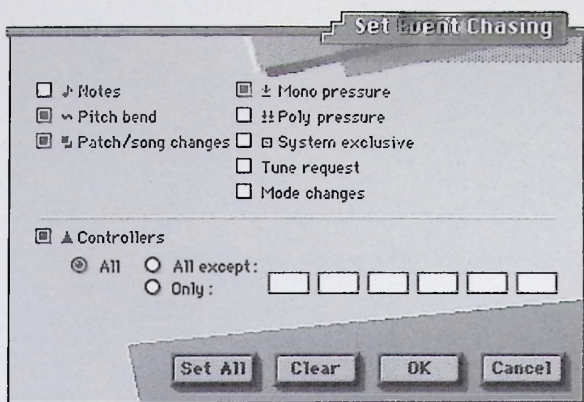
Event chasing addresses a common problem with playback: hearing the wrong patch (sound) when you begin playback in the middle of your sequence. This happens because MIDI data consists of a stream of single events. If a patch change occurs early in the stream, say at measure five, but you start playback later on, say at measure twenty, the patch change will not be played and your synth will not be set to the proper sound.

Here's how event chasing fixes this problem. Every time you click Play, Performer searches backward in each track for the last patch change, volume controller, and so on. If it finds one, it transmits the event before playback begins, setting the synth to the correct patch, volume, etc. Performer can chase all types of data, including notes which may be playing at the current location.

Performer allows you to choose which types of MIDI data will be chased. To enable Event Chasing:

1. Choose ***Set Event Chasing*** from the Basics menu.

The Set Event Chasing dialog appears.



2. Select the types of data you wish Performer to chase.

Click *Set All* to enable chasing of all MIDI events. Deselecting unnecessary types reduces chase time after the Play button is clicked.

3. Click OK to confirm your choice or Cancel to cancel it.

To disable Event Chasing, click *Clear* to deselect all data types for chasing.

In general, it is best to chase only types of data that need to be chased. In particular, notes add considerably to the time it takes Performer to chase.

Event chasing and loops

Event chasing cannot recognize loops in a track. If you have loops in a track, and the loops contain patch changes or other data that you are chasing, you may get unexpected results when you begin playback during or after the loop.

Auto-Scrolling

With the Auto-Scroll command in the Basics menu, windows with the ability to scroll will update during playback or recording. You can choose whether all windows on the screen will scroll, or only the top window. In addition, you can choose what kinds of Performer windows will scroll.

When Performer windows scroll, they “page” along with the music. That is, when playback reaches the last measure or event in the current window, the window jumps to the next windowful of data, just like clicking in the grey area of a scroll bar.

With Auto-Scrolling enabled, windows will update any time you change playback location, even when Performer is not playing back or recording. For example, if Performer is stopped and you press Rewind, all Auto-Scrolling windows will scroll to the new location indicated in the Counter window. Auto-Scrolling occurs when pressing the cueing buttons, dragging the arrow in the position bar, typing a new location into the Counter window, or cueing to a marker in the Markers window.

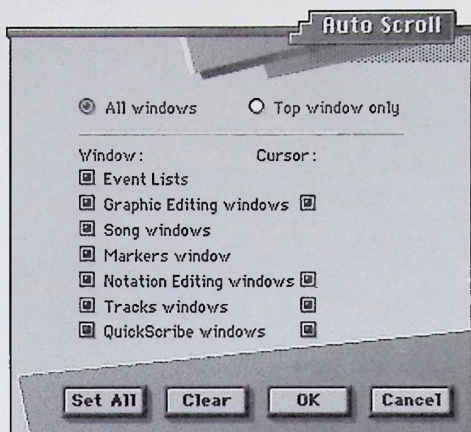
When Auto-Scroll is enabled, Graphic Editing, QuickScribe notation, and Event List windows open to the current playback location.

Auto-scrolling will only occur in windows related to the currently play-enabled Chunk. For example, if a Song window is open, it will not Auto-Scroll unless the song is play-enabled in the Chunks window. Windows associated with Chunks inside the song will not scroll when the song is play-enabled. Only the Song window and its Markers window will scroll.

To enable Auto-Scrolling:

1. **Choose *Auto-Scroll* from the Basics menu.**

The Auto-Scroll dialog box will appear.



- 2. If you would only like the top window to scroll, click the Top window only option.**

This option causes only the top window to scroll when you have more than one window open on the screen. This option also reduces Performer's processing load. If your Macintosh has a 68000-based CPU, or if your sequences tend to contain large amounts of dense MIDI data, this option will ensure accurate playback and responsive scrolling.

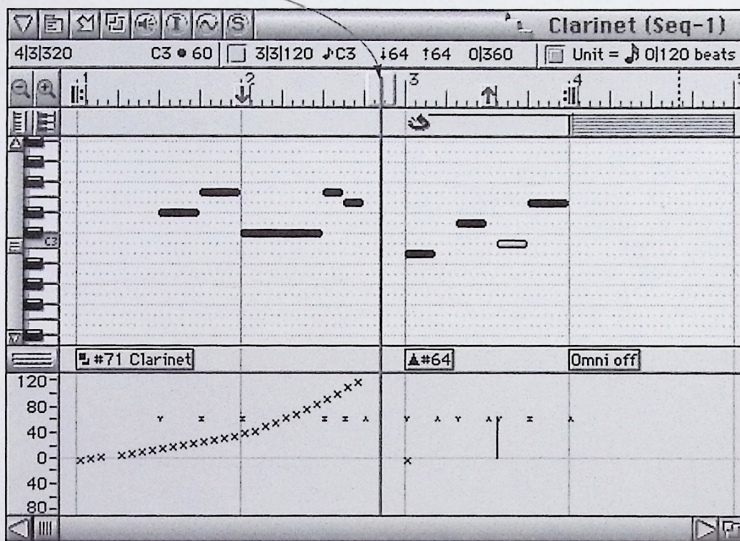
- 3. Choose which types of windows you prefer to Auto-Scroll.**

Click the check box next to the window type to select it. Use the Set All and Clear buttons to select or deselect all window types.

4. If you would like a scrolling cursor, select the cursor option(s).

The scrolling cursors display the current playback location as shown in the main counter. They can also be dragged left or right to change the current playback location. They can be dragged when Performer is stopped or while it is playing back.

With the Cursor option checked, a "wiper" appears in the Graphic Editing and Tracks Overview windows to show the currently playback location of the sequence. This wiper scrolls during playback and can be dragged to change the playback location. You can also double-click inside the time ruler at any location to make the cursor jump to that location.



5. Click OK.

To disable Auto-Scrolling:

1. Choose Auto-Scroll from the Basics menu.

The Auto-Scroll dialog box will appear.

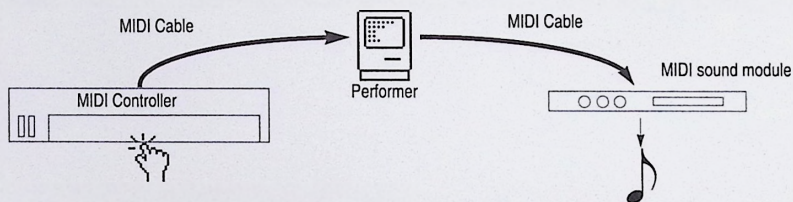
2. Click the Clear button.

This deselects all window types.

3. Click OK.

Chapter 8 *Patch Thru*

Patch Thru allows you to hear incoming MIDI data from your MIDI controller instrument played back on your output synthesizers. More technically, Patch Thru echoes MIDI data received by Performer to any MIDI device in your studio that you choose. You'll want to use Patch Thru when most of the time because it allows you to hear what you are playing on your MIDI sound modules while recording. Patch Thru also provides an easy way to experiment with different playback synthesizers without having to manually reconnect patch cords and change MIDI channels on the instruments.



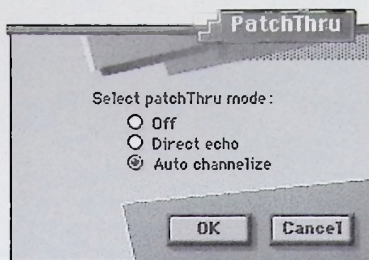
Here is an overview of how Patch Thru works. You press a key on your controller keyboard. The note gets sent to Performer. Performer determines which device (MIDI channel) the note will be echoed to by the track is currently record-enabled in the Tracks window. It then sends the note to the device assigned to that track, which plays the note using whatever sound (patch) is currently selected on that channel.

Patch Thru works whether you are recording or not. However, MIDI data will only be patched through tracks which are record-enabled. If you don't hear anything on your synthesizer modules when playing your controller, check to be sure that the correct track or tracks are record-enabled.

Timing and synchronization data are *not* echoed in Patch Thru.

Turning on Patch Thru

To turn on Patch Thru, choose it from the Basics menu and select either *Direct Echo* or *Auto Channelize*.



Direct Echo

Direct Echo causes incoming MIDI data from your controller to be echoed back out on the same channel it was received. For example, if your MIDI controller is transmitting on channel 3, MIDI data is echoed back out on channel 3 by Performer. The Input Filter settings do not affect direct-echoed data; information is simply echoed straight through, by-passing most of Performer's MIDI processing.

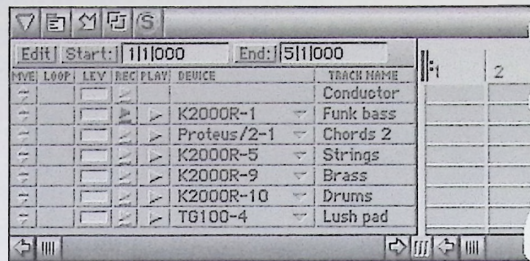
Direct Echo is useful in situations where you want to be able to change the channel you are echoing to from your MIDI controller keyboard by simply changing its transmit channel.

Auto Channelize

Auto Channelize causes incoming MIDI data from your controller to be echoed back out to the device and channel for the currently record-enabled track in the Tracks window. The following sections discuss several scenarios that affect Auto Channelize.

Auto Channelizing in a Sequence

When a sequence is play-enabled in the Chunks window, here is how Auto Channelize Patch Thru works. In normal recording mode (MultiRecord off), incoming data is echoed to the device specified for the record-enabled track in the currently play-enabled sequence. In the example shown below, any incoming data received by Performer will be sent to the Kurzweil K2000R channel one. This is because the Funk Bass track is record-enabled, and its play destination is channel one on the K2000R:

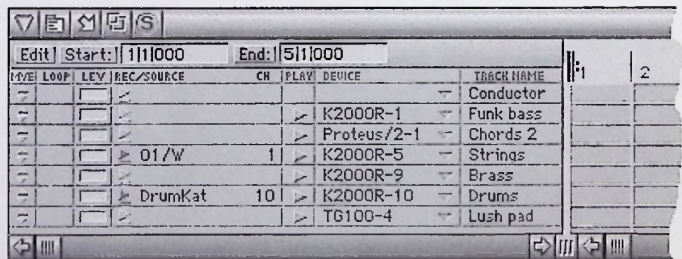


Every time you change the record-enabled track, Patch Thru repatches your controller instrument to echo out to the specified device for that track. Thus you always hear your incoming data as it would be played back.

If the record-enabled track is assigned to several playback devices at the same time, all of the devices will receive the patched thru data.

Auto Channelizing with Multi-record turned on

If MultiRecord is on, only MIDI data received on the specified recording Device for a track will be echoed to the corresponding playback channels for that track. In the following example, notes played on the Korg 01/W will be heard on the K2000R, channel 5. Notes played from the DrumKat will be heard on the K2000R channel 10.



In the above example, the two controller instruments will be rechannelized separately. If two different tracks had the same input recording channel and had a common output channel, the incoming data will be echoed twice to that output channel. This may cause

Auto Channelizing in a Song

Auto Channelizing and the Input Filter

Be Careful

problems with some synthesizers; caution is advised. Note that when in MultiRecord mode, the recording channel specified in the Input Filter will be ignored.

Since Patch Thru works even when you're not recording, you can use Performer as a sophisticated MIDI merger, mapper, or rechannelizer when in playback or when stopped (as well as during recording). Patch Thru allows you to route MIDI information from your controller instrument to any combination of synthesizer modules. By adding a group of tracks, each assigned to a different MIDI channel or set of channels, you can change the module configuration used for playback by simply clicking on the record-enable button for the track or tracks with the desired channel configuration. This allows you to experiment with channelization freely.

If a song is play-enabled in the Chunks window instead of a sequence, the following two conditions are necessary for Auto Channelizing to occur: 1) a sequence *within the song* must be record-enabled, and 2) a track within that sequence must also be record-enabled. If both are true, then Patch Thru will operate in the same manner as described above. For information about record-enabling sequences in a song, please refer to the *Chunks Window* chapter.

The Input Filter affects incoming data in Patch Thru mode. All data selected to be filtered out will not be echoed to the outputs. For example, if the pitch bend box is not checked in the Input Filter dialog box, pitch bend information will not be echoed through in Patch Thru.

If you use Patch Thru with a drum machine or any device that outputs timing information, the timing information will not be echoed through. To echo timing information, see the chapter called *Transmit Sync* chapter.

Using Patch Thru will cause a small delay (up to three milliseconds) since Performer must read all incoming data before sending it out again.

Some MIDI interfaces, such as the MIDI Time Piece II, have a patch thru option built into them. The MIDI delay factor will be smaller when using this option since it is closer to the MIDI signals. If you choose to use the echo feature, turn off Patch Thru on Performer or

incoming data will be echoed twice. If you choose to use Patch Thru in Performer, turn off the echo feature on the interface for the same reason.

Chapter 9 *Recording*

Real-time Recording

Performer records very much like a multi-track tape deck: you make the right connections, specify the tracks onto which to record and push the record button. Performer, however, has a great deal more flexibility than a tape deck. There are many options you can use while recording that affect which types of data are recorded and the time span in which recording takes place.

Recording is the main method by which MIDI data is input into the sequence. There are two types of recording: real-time recording and step recording. This chapter describes the basics of both methods and discusses real-time recording; the next chapter describes step recording in detail.

Real-time recording has two modes: standard and MultiRecord. In standard mode you can record on one track at a time. Data incoming on all channels (or the one you specify) is sent to this track. MultiRecord mode allows you to record on several tracks simultaneously, each receiving data from a different incoming MIDI channel.

Before recording in either mode, you should do the following things:

1. **Make sure your MIDI instruments are connected and configured the way you want them.**

Set the correct patches on your controller and playback instruments.

2. **(Optional) Check to make sure that Patch Thru is turned on so that you'll record the track with the same sound as it will play back with.**

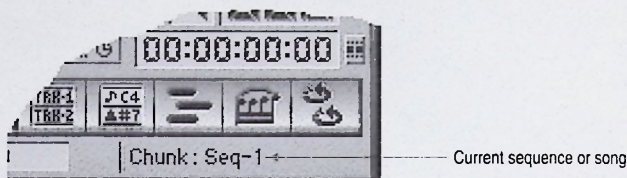
Patch Thru echoes incoming data to any device you choose in your MIDI studio. This is essential when using a separate MIDI controller instrument: it allows you to hear what you are playing while it is being recorded. Patch Thru is also useful to check whether your instruments are working and connected correctly.

3. (Optional) Set the Input Filter if needed.

If you wish to filter out some MIDI data when recording or record only from one specific channel, use the Input Filter from the Basics menu. The Input Filter defaults to notes, velocities, pitch bend, patch and song changes, and controller data checked.

4. If you have more than one sequence or song in the file, make sure it is the currently play-enabled chunk.

To do so, look at the current chunk indicator in the main control panel. If you need to switch sequences, use the Skip buttons.



If the sequence is inside a song, open the song's window by double-clicking on the song, highlight the sequence, and choose *Set Record Sequence* from the Song window mini-menu.

5. (Optional) Choose the starting meter or set up a meter map.

A meter map is the layout of meters for the entire sequence. If you have a number of meter changes in your sequence, it is a good idea to set these up beforehand; it will make recording much smoother and more musical. A meter map can be made with the Change Meter command on the Change menu. Consult the *Change Meter* chapter for more on this command.

6. (Optional) Set the tempo with the metronome in the main control panel.

To set the tempo manually, choose *Tempo Slider* from the Tempo Control pop-up menu and drag the tempo slider to the desired tempo. Using the tempo slider is handy for quickly setting a straight tempo. A tempo map is the layout of all tempo changes for the entire sequence. If you have a number of tempos in your sequence, especially ones that change over time (such as an *accelerando*), you may prefer to set these up before actually

recording any MIDI data. A tempo map can be made with the Change Tempo command on the Change menu. Consult the *Change Tempo* chapter for more on this command. Tap Tempo is a way to tap the tempo manually while you record, such as with a foot pedal. For more information, please refer to the *Tap Tempo* section in the chapter called *Receive Sync*.

7. Record-enable the track(s) you wish to record on.

To do this, open the Tracks window of the sequence you are recording into by double-clicking its name. In the Tracks window, click the Record-Enable button next to the track. If the button is red (or black on a black and white screen), the track is record-enabled. In standard record mode, only one track can be record-enabled. In MultiRecord mode, several may be record-enabled (more on this below).

8. Select the playback device(s) for the track being recorded.

See "Choosing a device for playback" on page 111 for details.

9. Select a location at which to begin recording.

If you are recording into a new sequence, you'll probably want to start at the beginning of the sequence. To do so, click the Rewind button. To start at a specific location other than the beginning, type in the location in the Counter window.

10. (Optional) Select the Wait and Countoff features if desired.

The Wait feature holds recording until you hit a key on your MIDI keyboard or the Macintosh keyboard. Countoff gives you a number of measures of countoff in the starting tempo before recording begins. Wait and Countoff can be activated in the Consolidated Controls window. See the *Consolidated Controls Panel* chapter for specific details.

11. To begin recording, press the Record button in the main transport controls.

The Record button will turn solid black, signalling that Performer is recording in real-time. You can also trigger recording by pressing the 3 key on the Macintosh keypad or, if you have already set up a MIDI remote control, by sending a MIDI event

from your controller. For more information about setting up MIDI remote controls, please refer to the chapter called *The Remote Controls Window*.

12. To stop recording, press the Stop button.

Or, press the zero key on the Macintosh keypad. Stop can also be mapped to a MIDI remote control. To hold recording, you can press the Wait or Pause button.

The above steps are used for standard recording mode. MultiRecord mode requires a few additional steps.

Cycle-recording

Several of Performer's features can be combined to provide comprehensive cycle-recording, complete with spot-erase and erasing the last pass. To get basic cycle-recording going:

1. Click the Memory-cycle and Overdub record buttons in the Consolidated Controls panel.

The memory-cycle button causes Performer to loop a section indefinitely. Overdub prevents each new pass from erasing the last one.

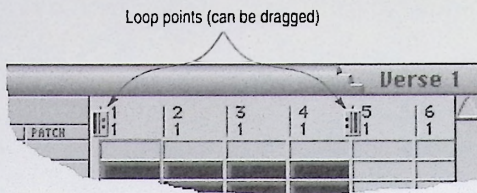


2. Set the start and end times of the region you want to loop in the Memory bar.

For a two bar loop, make the stop time 311|000. For a four bar loop, make the stop time 511|000. Stop time is always the downbeat of the measure after the last one in the loop. You can set the loop points graphically by dragging the loop repeat barlines in the Tracks overview as shown below.

MIDI data appears immediately during recording

Erasing the last pass and spot-erasing



3. Check Auto Scroll in the Basics menu to make sure that the cursor option is checked for the Tracks Overview.

This option provides a scrolling "wiper" to show you where playback is during looping.

4. Set the tempo in the tempo slider.
5. If needed, make sure that the Click is enabled in the Basics menu.
6. Cue Performer to the beginning of the loop region.
7. Click the record button in the main transport controls and begin recording.

In Performer, recorded data appears immediately as you record it, before you press the Stop button. This allows you to edit the data (erase, transpose, quantize, etc.) without stopping cycle-recording.

You can easily accomplish common cycle-recording tasks such as erasing the last pass and spot-erasing by opening an event editing window while cycle-recording. As you record, notes appear in the window right away, so you can do whatever you want to them without having to press the stop button. You can even insert notes by hand in the looped region, as well as continuous controllers such as volume controllers.

To quickly erase the last pass while recording a drum track, open the Graphic Editing window and double-click the key on the pitch ruler that corresponds to the note you just recorded. Doing so selects all the notes of that pitch in the track. Then hit the delete key.

To spot-erase graphically, click the note and hit delete.

Spot-erasing from your MIDI controller

Changing the MIDI channel or patch on the fly

Creating a permanent loop

MultiRecord Mode

A set of cycle-record remote controls, including a spot-erase function, is included in the Remote Controls window. These controls help further provide drum-machine style loop recording by providing the ability to spot erase from your MIDI controller while cycle-recording. See “Spot-erase” on page 105 for more information.

While you are cycle-recording, you can change the device, MIDI channel, or current default patch on the fly while recording as follows:

Next/Previous item	Key to press
Device	Shift up-arrow Shift down-arrow
MIDI channel	Option up-arrow Option down-arrow
Default patch (sound)	Command up-arrow Command down-arrow

You can also map these remote controls to MIDI keys on your MIDI controller, so that you can do everything from your MIDI controller during recording. See chapter 6, “The Remote Controls Window” for details.

Once you are satisfied with the loop, you can make it permanent by inserting a loop into one or more tracks. To insert a loop over all the tracks, double-click one of the two repeat barline loop points in the Tracks Overview to select the loop region and choose Set Loop from the Change menu. To insert a loop over only one track, select the appropriate track segments in the Tracks Overview before choosing Set Loop.

MultiRecord mode is used to record from several devices simultaneously; each channel may be recorded on a separate track. This is very useful in transferring data from another sequencer or when recording from several MIDI instruments simultaneously. MultiRecord is also useful for recording music while slaved to Tap tempo. Refer to the chapter *Receive Sync* for more information on Tap tempo synchronization.

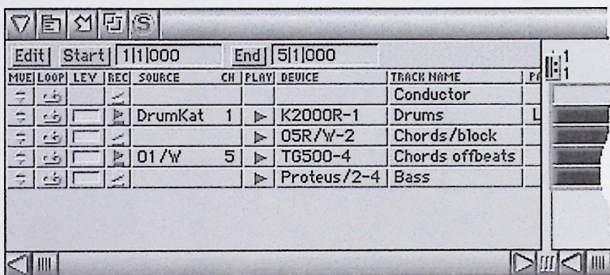
In addition to the steps listed in *Real-time recording* above, you need to do the following to prepare for recording in MultiRecord mode:

1. Find out what the current transmit channel is on your controller keyboard(s) or devices.

If you are recording from multiple sources, you may want to set each instrument or source sequencer track to transmit on a different channel. This helps avoid accidentally merging them.

2. Choose MultiRecord from the Tracks window mini-menu to check the menu item.

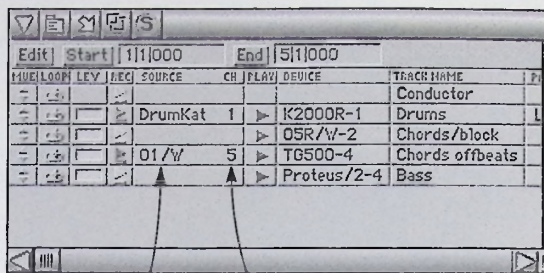
The Rec/Source column appears.



3. Record-Enable the tracks that you wish to record on.

Click on the Record-Enable button next to the track.

4. Select the input device and channel for each track from the pop-up menus provided in the Rec/Source column.



MIDI Controller devices are provided by FreeMIDI in a pop-up menu here.

Specify the transmit channel of the controller by choosing the appropriate channel from this pop-up menu.

5. Get ready to record.

If you are sending data from another sequencer or a time-based MIDI device, you will probably want Performer to synchronize with it. To put Performer in External Sync mode, see the *Receive Sync* chapter. Also refer to the *Receive Sync* chapter for information on recording while slaved to Tap tempo sync.

Step Recording

In step recording, MIDI note events are input one at a time, not in real-time. Step recording is done with the Step Record command on the Basics menu. Step recording is very useful for entering music which is too fast or complex to play accurately in real time. It is also useful when entering a score to be converted to music notation programs. For details about step recording, see the *Step Record* chapter.

The Input Filter

The Input Filter allows you to specify what types of MIDI information are recorded.

To use the Input Filter:

1. Choose Set Input Filter from the Basics menu.


A dialog box appears.

Specifying Controller Numbers in the Input Filter

2. Choose the types of data to be input by clicking on the corresponding check box(es).

You can choose multiple types of data. You can choose all types of data at once by clicking on the Set All button. You can uncheck all the check boxes by clicking on the Clear button. Use Option-click to check only the check box you click on, unchecking all others; use Command-click to check all boxes except the one you click on.

3. Press OK to confirm your choice or Cancel to cancel it.

 **Caution!** *The types of data you select will stay in effect until you change the filter setting.* The Input Filter setting will affect all data recorded. Be especially careful when muting types of data that you normally don't filter. If you don't remember to turn them back on afterwards, you may lose valuable data in the future during recording.

The buttons under the Controllers check box in the Input Filter allow you to quickly choose which controller data to record. Click in the Controllers check box, click on the type of option you wish, and then enter the controller numbers if necessary.

All: Information from all controllers will be recorded.

All except: Information from all controllers *except* the controller numbers you enter will be recorded.

Only: Only information from the controller numbers you enter will be recorded.

To enter controller numbers for the *All except* and *Only* options, click in the text boxes next to the option and type in the numbers. You can use the Tab key to move between boxes in the same option.

Auto-Record

Auto-Record automatically turns on and off the record function at locations you specify. This allows you to record without having to manually click the Record button on and off.

In audio recording, this process is called “punching in” and “punching out”. A recording engineer is relied upon to listen for musical cues or watch for tape counter numbers to know exactly when to enable and disable recording. Performer allows you to pre-program these actions.

Typically, Auto-Record is used to re-record, overdub or “drop in” a part to an existing sequence. Recording is automatically enabled at the designated “Punch In” location, and disabled at the “Punch Out” location. You can play along with the sequence up until punch in without recording. Likewise, anything you play after the punch out location will not be recorded. This feature is useful for correcting notes or passages without affecting the surrounding MIDI data. Auto-Record can also be used in combination with Tap tempo synchronization, to “punch-in” a discrete passage of tempo information on the Conductor Track.

To use Auto-Record, see “The Auto-Record button” on page 76 detailed information about how to use Auto-record. Consult the *Receive Sync* chapter for information on the use of Auto-Record while slaved to Tap tempo sync.

Recording in External Sync

Recording while still-framed

When recording in external sync other than Tap tempo, the Record button is turned off every time the master device stops or rewinds. This is a safety precaution, to prevent accidental erasure of previously recorded data. To record in external sync, start the master device, wait for Performer to lock up, and then press the record button. Refer to the *Receive Sync* chapter for details on recording while slaved to each type of external sync.

If you are slaving to video with a VITC converter such as Mark of the Unicorn's Video Time Piece, Performer allows you to remain in record mode while the video parked on a SMPTE frame. To do so, check the *Record while still framed* option in the Receive Sync dialog box in the Basics menu.

Input Quantize

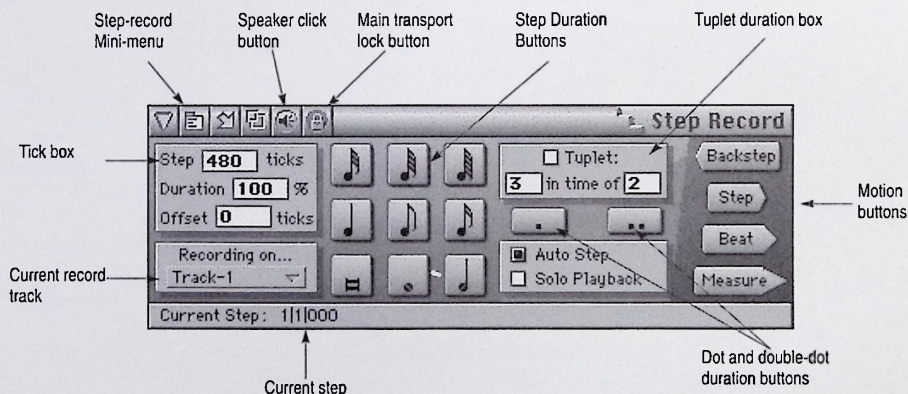
Performer's Input Quantize feature quantizes notes during recording in the same fashion as a standard drum machine. Notes get quantized immediately as they are being received and appear quantized in the track afterwards. If you are loop recording, the notes will play back quantized the next time through the loop.

For more information, please refer to the Input Quantize section in the Region Commands 1 chapter.

Chapter 10 *Step Record*

Step Record, available in the Basics menu, is an alternative to real-time recording: it waits for you to enter notes one at a time and allows you to specify the duration of each. With it, you can enter passages too complex for real-time entry. Whatever you enter in Step Record will be rhythmically accurate (it won't need quantizing). This is particularly useful for entering music for conversion to music notation by Mosaic or other music notation software.

Quick Reference



The **Current record track** is selected from this pop-up menu and displayed for reference. This is the track that is being recorded into.

The **Step Duration buttons** allow you to set the duration for the step.

The **Dot and Double Dot buttons** extend the duration chosen with the step duration boxes by one half or three quarters of the selected value, respectively.

The **Tick box** displays the duration in ticks for the step. You can enter the duration for the step directly by clicking in this box and typing in the number of ticks.

The **Tuplet duration box** allows you to enter any kind of tuplet: triplets, quintuplets, etc.

The **Backstep button** erases the previous step.

The **Step button** records the current step with the chosen duration.

The **Beat button** records the current step and advances you to the next beat.

The **Measure button** records the current step and advances you to the next measure.

Checking the **Auto Step check box** causes the current step to be recorded each time a key is let up on the MIDI controller.

Checking the **Speaker click button** causes a click to sound when a step is recorded.

The **Transport lock button** connects or disconnects the Step Record window to or from the main transport controls and counter. When connected, Performer plays all tracks as you step, and the main Counter follows the current step. When disconnected, the Step Record window steps independently of the main Counter. While disconnected, you can step record while Performer is playing back.

The **Duration box** sets the duration of the notes being entered, where 100% is the length of the current step.

The **Offset box** shifts the attack time of the note being entered earlier or later than the current step.

The **Solo Playback** check box option solos the track being step-recorded into. When unchecked, all play-enabled tracks will play as you step.

Step Record Mini-menu

Note Durations: lets you assign a MIDI controller such as a modulation wheel to control note durations as you enter them.

Basics

Step Recording Notes and Rests

Note Offset: Lets you assign a MIDI controller such as a pitch bend wheel to control the note offset as you enter notes.

Clear MIDI Events: Clears any events that are currently shown in the step bar.

Step Record is primarily used to enter notes and rests. For information about how to step record controllers, pitch bend, and patch changes, see “Step Recording Controllers, Patch Changes, or Pitch Bend” on page 153 in this chapter.

A step consists of a particular duration (an eighth note, for example). In addition, a step can contain one or more notes that are being held over from previous steps. All notes in a step last for the complete duration of that step.

A step recorded passage contains a series of adjacent steps. Each step has a duration specified by the user. A step can contain:

- *nothing*: i.e. a rest
- *struck notes*: Notes with attacks at the beginning of the step. Unless held into the next step, these will be released at the end of the step.
- *held notes*: Notes with attacks in a previous step. Unless held into the next step, these will be released at the end of the current step.

In Step Record, the time at the beginning of a step is represented in measure time. In 4/4 time, a quarter note beginning at 1|2|000 will last for 480 ticks, ending just before 1|3|000. If a second quarter note directly follows the first, it will begin on 1|3|000. Two eighth notes following just after will begin on 1|4|000 and 1|4|240, respectively.

A rest is a step containing no notes. It is an “empty” duration. Although rests are registered in the Step Record window, they do not appear in the Event Editing windows: they are the spaces between note events.

Velocity information is recorded in Step Record unless specifically disabled by the Input Filter available from the Basics menu.

Getting Ready

Before selecting Step Record, you should do the following:

1. **Select a sequence to record into.**

Play-enable the sequence in the Chunks window. If the sequence is inside a song, open the song's window by double-clicking on the song, highlight the sequence, and choose *Set Record Sequence* from the Song window mini-menu.

2. **Select the track you wish to record on just as you would for real-time recording.**

To do this, open the Tracks window of the sequence you are recording into by double-clicking its name. In the Tracks window, click the Record-enable button next to the track. When the button is highlighted (solid black), the track is record-enabled. In MultiRecord mode, the first record-enabled track in the track list will receive incoming data. You cannot step-record into the Conductor Track.

3. **(Optional) Open the Event List, Graphic Editing, or QuickScribe notation window for the track on which you are recording.**

You can open all three, if you like. We highly recommend doing so because it allows you to see what you are step recording as you go.

4. **If you are using the Graphic Editing or QuickScribe notation windows, choose Auto Scroll from the Basics menu.**

Select the appropriate option. We also recommend that you choose the cursor option, which produces a scrolling cursor in the window, which clearly indicates the current step location.

5. **Set the Counter to the time you wish to start recording.**

If you want to start at the beginning of the sequence, set the Counter to 1|1|000.

6. **If you don't want to erase pre-existing music on the track and want to merge new material with old, click the Overdub record mode button located just below the main transport controls.**

If there are meter changes in the passage you are about to record, create them with the Change Meter command.



7. If you want to include key signatures in the passage you are about to record, create them with the **Change Key** command.

Note that key signatures do not affect the actual data; they only affect the display in the Event List window and while step recording.

8. **Select Step Record from the Basics menu.**

The Step Record window appears.

The current step indicator in the Step Record window displays the starting location for the first step; this is automatically set to the current Counter location.

When you are finished setting up, you will see the Step Record window, along with one or more of the event editing windows for the track. The notes that you step record will appear in the event editing windows as you proceed with step recording.

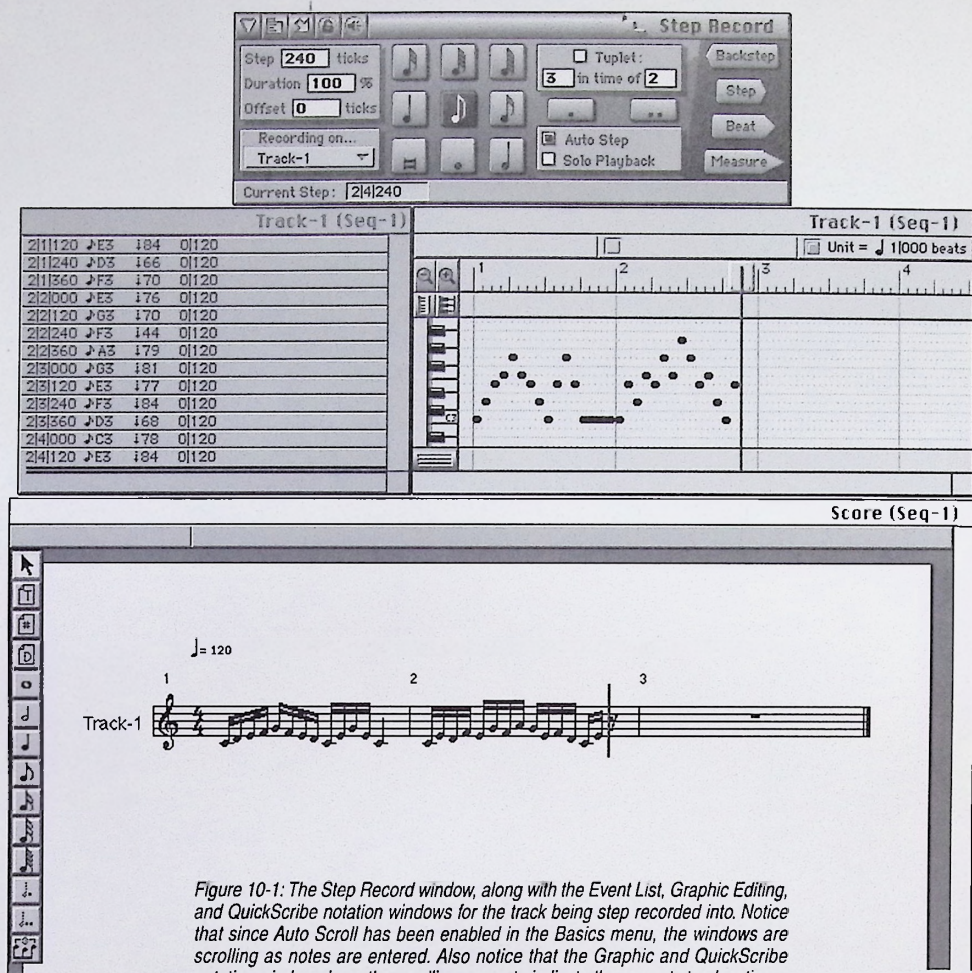


Figure 10-1: The Step Record window, along with the Event List, Graphic Editing, and QuickScribe notation windows for the track being step recorded into. Notice that since Auto Scroll has been enabled in the Basics menu, the windows are scrolling as notes are entered. Also notice that the Graphic and QuickScribe notation windows have the scrolling cursor to indicate the current step location.

Setting Step Durations

The duration buttons are used to set step durations. Clicking on a duration button will highlight it and assign that duration to the step. Durations remain set until changed, allowing you to enter a stream of notes with the same duration very quickly.

To select more than one duration box at once, hold down the shift key while clicking on the desired duration box(es). When more than one box is selected, the step duration is equal to the sum of the selected values.

You can also select durations using the Macintosh extended keypad. To do so, press the caps lock key to toggle the keypad from its standard transport functions to the step-record note-duration functions. (You can customize how this is done in the Remote Controls window if you like.) Press one of the number keys to select a duration. It remains selected until you deselect it. To deselect it, press it again.

Setting Dotted Durations

The dot and double dot boxes can be used to modify the selected step duration. If the dot box is selected, it signifies a dotted step duration, i.e. one and one half the value of the highlighted duration(s). If an eighth note and dot are selected, the step duration will be a dotted eighth note, i.e. a metrical value of an eighth plus a sixteenth. If the double-dot box is selected, it signifies a double-dotted step duration, i.e. one and three quarters the value of the highlighted durations. If a quarter note and double dot are selected, the step duration will be a double-dotted quarter note, i.e. a metrical value of a quarter plus an eighth plus a sixteenth. Only one of the dot boxes may be active at a time.

Entering a Triplet Duration

The triplet box can be used to set the step duration to a triplet value, allowing you to enter triplets, quintuplets, septuplets, etc. These values are expressed in the standard way, *x* in the time of *y* durations. The triplet box, when active, actually *modifies the duration you choose in the duration boxes* (including the dot and double dot modifiers). For example, an eighth note duration is equivalent to 240 ticks. If the triplet box is set to "3 in the time of 2", step duration (displayed in the tick box) becomes 160 ticks, one third of a quarter note.

To set the triplet value:

1. Click on the Triplet check box next to the word "Triplet".
2. Enter the number of triplet notes to be entered in the first box.
3. This is the box to the left of the words "in the time of".

Specifying an Exact Number of Ticks for a Step

Choosing a Note Duration

Generating Random Note Durations within a Range

4. Enter the number of regular notes the triplet replaces in the second box.

Eighth note triplets, for example, are three equal duration notes in the time of two eighth notes. Quintuplet sixteenth notes are five equal notes in the time of four sixteenth notes.

The triplet box is active when the check box next to the word "Triplet" is highlighted: make sure to deselect it when you have finished entering the triplet values. You may enter any number of notes in the space of any other number. Performer does all the necessary calculations for the proper durations; you needn't worry about the exact number of ticks a single triplet duration will require.

Performer computes the number of ticks for each duration automatically when you click on the boxes. You can directly specify the exact number of ticks for a step by clicking on the tick box. The equals sign will disappear and all duration boxes will be deselected to indicate that you are entering the number of ticks directly. At this time, you can type in a new duration value. Click on any duration box to return to specifying durations as note values.

Normally, the duration of the note being step-entered is 100%, which makes it exactly as long as the step itself. For example, if the step was a quarter note, the note would be 480 ticks long.

Often, however, you might want to choose a different duration than the length of the step. For example, you might want to enter staccato quarter notes: the step duration is 480 ticks, but the duration of the notes should be much shorter—say around 60 ticks.

To set a duration that is longer or shorter than the current step duration, type in a percentage below or above 100%.

The duration can be controlled on the fly using a pitch bend or modulation wheel. For more information, see the remote control section at the end of this chapter.

Note durations can be generated randomly within a range. To do so:

1. Choose Note Durations from the Step Record mini-menu.

Setting Default Step-Record Durations

2. In the duration range, enter the lowest and highest percentage that you would like to use.

100% equals the current step duration, so if you'd like to be able to enter notes longer than the step duration, make the top value be above 100%.

3. Check the "Randomize Durations within a range" option.
4. Click OK.

Performer allows you to control the duration of the notes that you are step-entering independently of the step duration. For example, if you are entering quarter notes, the step duration is 480 ticks. However, if you would like the quarter notes to be played in a staccato fashion, you would probably set the duration to approximately 120 ticks or some other value less than 480 ticks.

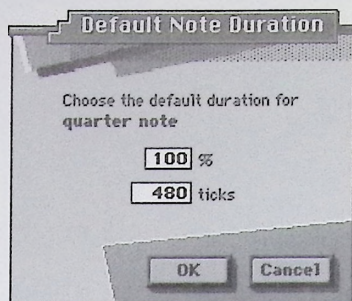
One way to control the duration is with the duration option described in the section called "Choosing a Note Duration" on page 146.

Often, however, you might like to select a different duration for each type of note (quarter note, half note, whole note, sixteenth, etc.). For example, you might want quarter notes to be 80% of their step duration, half notes to be 100%, and sixteenth notes to be 65%, where each duration has an independent duration.

You can set up default durations for each note duration as follows:

1. Double-click the duration button that you would like to set.

A dialog box appears in which you can set the default duration for that note.



2. Type in the desired duration.

You can either type a percentage or a number of ticks. In either case, the other text box will update to reflect the value you enter. For example, if you entered 50% in the box above, the tick value box would change automatically to 240.

3. Click OK.

4. Repeat this procedure for each desired duration.

Choosing a Note Offset

Normally, step entered notes are inserted exactly at the tick location of the current step. The offset option allows you shift their entry a few ticks before or after the current step location. Offset is ideal for passages in which you'd like to push or lay back the feel.

To place notes a certain number of ticks *before* the current step location, type in a negative number of ticks in the offset text box.

To place the notes a certain number of ticks *after* the current step location, type in a positive number of ticks.

The offset can be controlled on the fly using a pitch bend or modulation wheel. For more information, see the remote control section at the end of this chapter.

Generating Random Note Offsets within a Range

Note offsets can be generated randomly within a range. To do so:

1. Choose Note Offsets from the Step Record mini-menu.

Soloing the Record Track

Performing Step Entry

Stepping Automatically

2. In the offset range, enter the earliest and latest offset that you would like to use.

Use a negative number to indicate the earliest offset, such as -15.

3. Check the "Randomize Durations within a range" option.
4. Click OK.

Normally, all play-enabled tracks play along with you as you step record. However, if you want to mute all other tracks in order to solo the one being recorded into, click the Solo Playback check box.

After setting the step duration, you are ready to enter notes. When entering them, you can proceed to each next step automatically (with the Auto Step option checked) or manually (with the option unchecked).

Enter one or more enter notes with Auto Step in the following manner:

1. Hold down one or more notes on your MIDI controller.
2. Release the note(s) to enter the step.

When Auto Step is enabled, a step is automatically recorded when you release a key on your MIDI input keyboard, just as if you had pressed the Step button. This makes entry quick and easy.

For example, using Auto Step, you could enter an eighth note scale without using the step button: just set the duration to an eighth note and play the scale on your MIDI keyboard.

When using Auto Step, be aware of the following things:

Play staccato: make sure that the notes for each step are attacked and released crisply, with clean gaps between the notes. If the release of a note overlaps with the attack of the next one, you may get two notes in a step in which only one was intended. Don't worry about the duration. Remember, it is determined by the duration option.

Wrong notes will be recorded automatically: If you hit a wrong note, you must use the Backstep button to erase it and re-enter the note or chord. This differs from manual step mode in which you can replay

Stepping Manually

the notes as many times as you like before you click on the Step button, and only those notes being played at the moment you click on the button are recorded.

At times, you may wish to choose when to proceed to the next step, such as when you are holding a note or chord through several steps. To do so:

1. **Hold down one or more notes on your MIDI input keyboard.**
2. **Click on the Step button.**
3. **Release the note(s).**

This will cause one step to be recorded containing the notes you played. Clicking on the Step button will record those notes which are being held down on the controller keyboard. The step will not be completed until you press the Step button. If you continue to hold the same notes down and press the Step button again, the notes will be recorded as "held" since they were not released in the previous step.

You can use the space bar on the Macintosh keyboard instead of pressing the Step button.

If you play a wrong note, simply play the correct one before pressing the Step button.

Entering Rests

Rests are entered by pressing the step, beat, or measure buttons with no notes held down. This records a step with no notes for the chosen duration.

Hearing a Click After Each Step

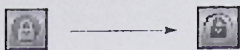


Click the speaker click button to highlight it. When highlighted, it causes a click to sound every time a step is entered. This is highly recommended when using Auto Step, as it is a useful indicator of step completions. The volume of this click can be adjusted with the *Speaker Volume* feature on the Control Panel desk accessory; any adjustment to the click volume must be made from the Finder.

Listening to What You Have Recorded

When you are finished step recording, and you'd like to hear what you have done, press Rewind, or cue to the desired start measure. Then press Play.

Disconnecting the Counter From Step Record

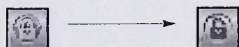


Notice that when you rewind and play back, or do just about anything else besides step-recording, the Transport Lock button in the title bar of the Step Record window unhighlights. (You can also unhighlight it by clicking it.) This indicates that the main Counter in the Controls Window is no longer locked to the current step location in the Step Record window.

In this mode, the Step Record window acts entirely independently of Performer's main transports (play, stop, rewind, etc.), as well as the main Counter. Thus, you can play, rewind, fast forward, stop, and otherwise cue around in the sequence completely independently of where you are step recording.

In this mode, other tracks do not play along with the track that you are step recording into. To get them to play along, click the Transport Lock button again to highlight it. Doing so locks the transports to Step Record.

Connecting the Main Counter to Step Record



Changing the Current Step Location

If, as you Step Record, you would like other tracks to step along with you, highlight the Transport Lock button before you begin. Doing so causes Performer's main Counter to follow the current step indicator in the Step Record window. All play-enabled tracks will play as you step through the sequence.

To change the current step location:

1. Click the Current Step location to edit it.



2. Type in the desired location.
3. Press the return key.

Displaying Notes as You Step Enter

Erasing the Last Step with the Backstep Button

Stepping to the Next Beat or Measure

Changing the Current Record Track

4. If you wish to connect the main Counter to the new Step Record location, highlight the Transport Lock button.

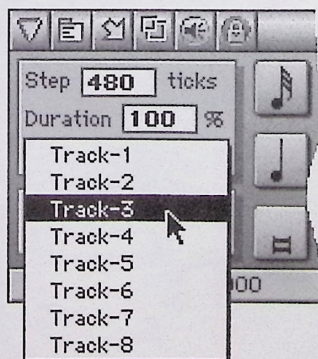
Doing so causes the main Counter to follow you as you step, and all play-enabled tracks will play with you as you step.

Notes that you step enter appear in the event editing windows of the track as you enter them. To view them either during or after entry, open the Event List, Graphic Editing, and/or QuickScribe notation window for the track on which you are recording. See Figure 10-1 on page 144.

Pressing the Backstep button will erase the step you just entered (the one displayed just above the current step bar). After pressing the Backstep button, the time in the current step bar will be the exact starting time of the step erased with the Backstep button.

The Beat and Measure buttons are special step advance buttons. They compute the duration necessary to get to the next beat or measure: the step is recorded using that duration and you are advanced to the next beat or measure for the next step. For example, if the current step is on 2111212 and the meter is 4/4, when the Beat button is pressed, a step of 268 ticks will be recorded and the next step will be entered at 2121000. If the Measure button is pressed, a step of 21268 (2 quarter notes and 268 ticks) will be entered and the next step will be entered at 3111000.

To change the current record track, click the "Recording on..." pop-up menu and select a different track.



Adding to Existing Material in a Track

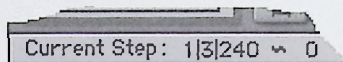
Step Recording Controllers, Patch Changes, or Pitch Bend

You can add to existing material in a track as long as you first turn on Overdub record mode with the Overdub record button in below the main transport controls. Otherwise, the newly step recorded data will replace existing data in the track.

To step record a controller event, patch change, or pitch bend event:

1. **Play the event.**

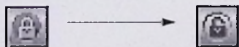
The event appears in the current step bar.



2. **Press the Step button or any other motion button to record the event.**

Events, such as patch changes, controllers, and pitch bend do not trigger auto step. In these cases, play the event and proceed to the next step by pressing the Step button (or any other motion control button.)

Step Recording During Playback



Step recording can be done during playback. For example, you can step record notes into a loop and have Performer play back the loop in real time as you build the loop. This can be ideal for building drum loops with Step Record.

To Step Record into a loop during playback:

1. **Choose Step Record from the Basics menu and unhighlight the Transport Lock button in the title bar of the Step Record window.**

This disconnects the main Counter from Step Record.

2. **Set up a loop in a track.**

If necessary, you can initially make the loop repeat infinitely while you are building it and later on change it to the desired number of repetitions.

3. **Choose the track with the loop from the "Recording on" pop-up menu in the Step Record window.**



Using the Step Record Remote Controls

4. Click the Overdub record button located just below the main transport controls to enable Overdub record mode.

This allows you to step record over the same region in the loop without erasing existing material in the region.

5. Set up any other Step Record options as desired, such as Solo Playback and Auto Step.

6. Press the Play button to begin Playback.

As the sequence plays, notice that the Current Step in the Step Record window remains where you begin.

7. Pop-edit the current step counter to set it to the location where you want to begin step-recording.

8. Begin Step Recording as desired.

9. When you reach the end of the loop, pop-edit the current step indicator to step record the next pass through the loop.

As Performer keeps playing, you can repeat this step as many times as necessary as you build the loop. As you build it, you will continue to hear it playback.

10. When you are finished, press Stop.

All of the functions in the Step Record window are available as remote controls in the Remote Controls window. This allows you to map them to your MIDI controller so that you can perform the entire step recording process from in front of your MIDI instrument, rather than in front of your computer screen.

Remote Controls				
FUNCTION	EVENT	SOURCE	CH	MAC KEY
Next Record Track		any	any	i
Prev. Record Track		any	any	!
Step Record Controls	♯Ab0 i	any	any	Lock - Return
Backstep		any	any	Lock [0]
Step		any	any	Lock [Enter]
Beat		any	any	Lock [+]
Measure		any	any	Lock [-]
Tuplet On/Off		any	any	Lock [/]
128th note		any	any	Lock [9]
64th note		any	any	Lock [8]
32nd note		any	any	Lock [7]
16th note		any	any	Lock [6]
8th note		any	any	Lock [5]
Quarter note		any	any	Lock [4]
Half note		any	any	Lock [3]
Whole note		any	any	Lock [2]
Double whole note		any	any	Lock [1]
Dot		any	any	Lock [.]
Double dot		any	any	Lock [=]
Auto Step On/Off		any	any	Lock [*]
Solo Playback On/Off		any	any	Lock - p
Audible Click On/Off		any	any	Lock - k
Clear MIDI events		any	any	Lock [Clear]
Chunk Select	♯Bb0 i	any	any	Opt [Enter]
Seq-1	♯C-2 i	any	any	a

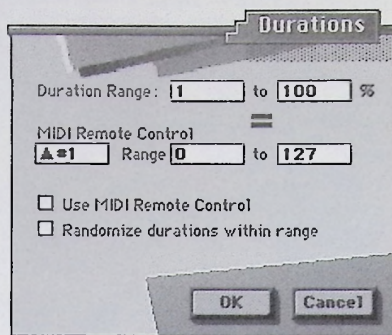
Important note! Be careful about the other Remote Controls, such as the Transport controls or the Chunk Select controls. Be sure that you have either disabled them (with their group master) or remapped them so that they do not interfere with the notes that you are step recording. See the Remote Controls chapter for information about how to remap and disable groups of remote controls.

Controlling Duration with a MIDI Controller

You can set up Step Recording such that a mod wheel or other continuous controller controls the duration of the notes being inserted.

To assign a pitch bend wheel, mod wheel, or data slider to the duration:

1. Choose Note Durations from the Step Record window mini-menu.



2. For duration range, enter the lowest and highest percentage that you would like to use.

100% equals the current step duration, so if you'd like to be able to enter notes longer than the step duration, make the top value be above 100%. The maximum value you can enter is 200%.

3. For the MIDI Remote Control, enter the controller type, and enter a range of controller values that will be mapped to the duration range you specified above.

For example, if you specify a duration range of 50% to 150%, and you specify a controller range of 0 to 100, when you move the mod wheel (pitch bend wheel, or data slider) to 100, the duration will be set to 150%. Likewise, if you move the controller to 0, the duration value will be set to 50%. You can enter any of the above values by highlighting the text box with the tab key and moving the controller wheel or slider.

4. To enable MIDI Remote Control, click the MIDI Remote Control check box.
5. If you wish notes to be assigned a random duration within the duration range you've chosen, click the "Random Duration within range" check box.
6. Click OK to confirm your choices.

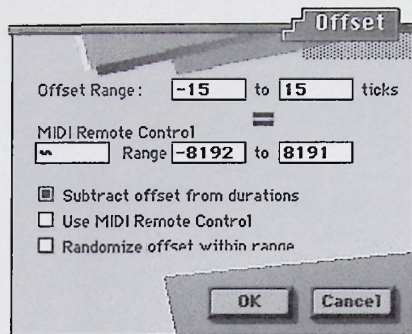
Now you can control the duration with your mod wheel. As you move the wheel, notice that the duration value changes in the Step Record window.

Controlling the Offset with a MIDI Controller

You can set up Step Recording such that a mod wheel or other continuous controller controls the offset of the notes being inserted.

To assign a pitch bend wheel, mod wheel, or data slider to the offset:

1. Choose Note Offset from the Step Record window mini-menu.



2. For the offset range, enter the earliest and latest value over which you would like to set the offset.

Type a negative tick value in the first text box for the earliest value; type a positive tick value in the second box for the latest value.

3. For the MIDI Remote Control, enter the controller type, and enter a range of controller values that will be mapped to the offset range you specified above.

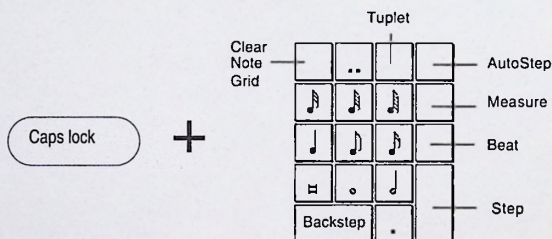
For example, if you specify an offset range of -15 to 15, and you specify a controller range of 0 to 100, when you move the mod wheel (pitch bend wheel, or data slider) to 100, the offset will be set to 15. Likewise, if you move the controller to 0, the offset value will be set to -15. You can enter any of the above values by highlighting the text box with the tab key and moving the controller wheel or slider. The minimum is -240 ticks and the maximum is 240 ticks.

4. If you would like the note's duration to be maintained, check the "Subtract offset from durations" option.

Using the Macintosh Keypad

5. To enable MIDI Remote Control, click the "Use MIDI Remote Control" check box.
6. If you wish notes to be assigned a random offset within the range you've chosen, click the "Randomize offset within range" check box.
7. Click OK to confirm your choices.

In addition, the step record commands are mapped to the Macintosh keypad as shown below. The caps lock key must be down to use these key assignments. Pressing the key performs the same actions as pushing the buttons in the Step Record window, with one exception: a duration remains selected until you press it again; pressing a different duration does not deselect currently selected durations. This allows you to easily specify a composite duration (such as an eighth and a quarter). To clear all durations, use the *Clear Note Grid* key: the Clear key on the keypad.



Be Careful

Step recording will record over previously recorded material in the same time span in the track. Use Overdub record in the Consolidated Controls Panel if you want to merge your step recorded material with what is already on the track in that time span.

If you enter notes or backstep quickly, the display might temporarily be suspended in order to accurately process the events. Don't worry: as soon as you slow down or stop entering or backstepping, the display will catch up.

You may find that velocities recorded in step record are uneven. If this occurs, you can edit them by selecting the step recorded region and using the Change Velocity command in the Region menu to set all velocities to the desired values.

Hints

Be sure to uncheck the tuplet box as soon as you are through with it; otherwise, subsequent durations will be incorrect.

If you discover that you've left out a note after step recording, use the Shift command on the Edit menu to remove or add extra space to avoid having to re-enter the entire passage again.

To enter a chord with staggered releases, use manual stepping.

You can enter chords with more than five notes (one hand's worth) by making two or more recording passes, for instance, one for each hand of a piano part. This can be done by recording on separate tracks or by using overdub record to merge in the second part.

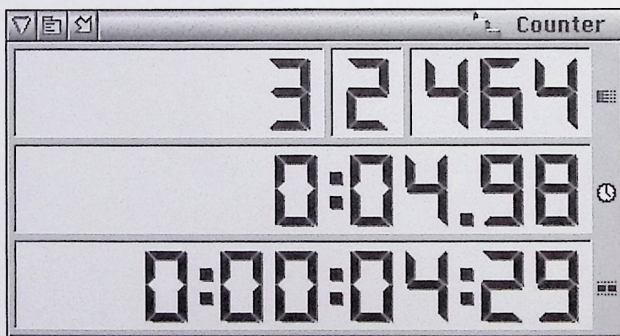
If there are a number of duration changes in a step record passage, it may be easier to choose the smallest common duration value and hold notes through steps to create longer durations. For example, a half note can be entered by holding an eighth note over four steps. If the passage you are entering is rhythmically complex, it may be best to use manual stepping (Auto Step off) in order to keep track of each step entered.

Chapter 11 *The Counter Window*

Setting the Counter window display

The Counter Window is identical to the main counter in the Consolidated Controls Panel, except that it is a large, separate window, and it can display all three time formats at once. For complete information about using either counter, see "The Counter" on page 88.

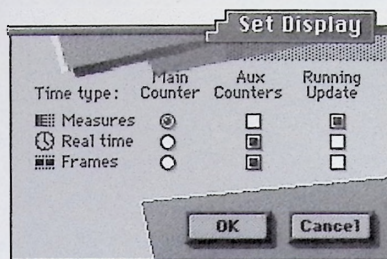
The counter window can display one or more of the three time formats in any combination. One format is designated as the Main Counter. It will appear at the top of the window. You can also specify two "Aux" (auxiliary) Counters which appear below the Main display. The format is identified by a small icon positioned just to the right of it in the Counter window:



Counters can continuously display the current location of the sequence or song or can update the location only after the stop button is pressed. The former mode requires some microprocessor overhead; turning off the continuous update option will improve the program's responsiveness during recording and playback.

To set the counter display:

1. Choose the **Set Display** command from the **Counter** window mini-menu.



2. Choose the time display for the main counter by pressing the desired button in the **Main Counter** column.
3. Choose zero, one, or two other time formats by clicking on the desired box(es) in the **Aux Counter** column.
4. Specify which of the displays will be continuously updated by clicking in the desired box in the **Running Update** column.

If the **Running Update** box is not checked, the corresponding time display will change to dashes while the sequence is playing or recording.

5. Press the **OK** button to confirm your choice or the **Cancel** button to cancel it.

Counter window mini-menu

In addition to the **Set Display** command mentioned in the previous section, the **Counter** window mini-menu has two other commands.

Set Frame Rate

For complete information about setting the SMPTE frame rate, see "Slaving to SMPTE with MTC, DTL, or DTLe" on page 609.

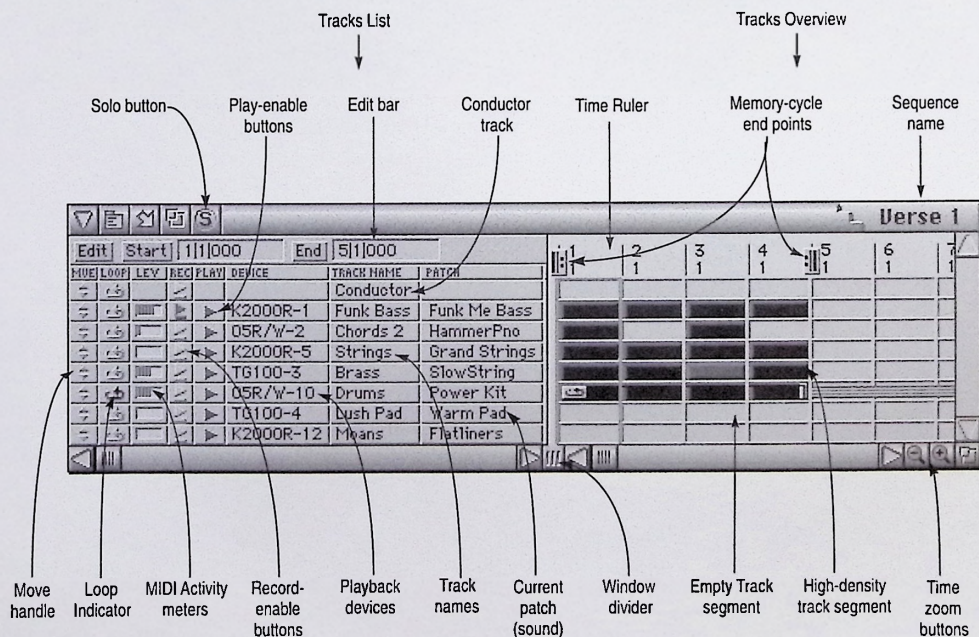
Set Chunk Start

For complete information about setting the start time of a sequence or song (chunk), see "Setting the start time" on page 90.

Chapter 12 *The Tracks Window*

The Tracks window is one of the most important features in Performer: it allows you to define and organize the contents of each sequence in your Performer file. It is also perhaps the most powerful and flexible window in Performer. The Tracks List portion of the window allows you to create tracks, assign MIDI channels for recording and playback, set regions for editing, customize track names, add comments, and more. The Tracks Overview portion allows you to view, select, and edit the data in each track.

Quick Reference



Tracks List: Displays the track names and important information about each track: the play channel or device assignment, the play and record buttons, the current patch setting, and comments. Option-click the track name to pop-edit it.

Tracks Overview: Displays each track in equal-length segments, which can be zoomed to show as much as 16 measures per segment or as little as 30 ticks. Each segment displays how much data is present in that segment. To view the data in a segment, double-click, command-double-click, or option/command-double-click to open the Event List, Graphic Editing, or QuickScribe notation window.

Solo Button: Enabling this button by clicking it puts Performer into Solo mode—the same as using the Solo command in the Tracks window mini-menu. Highlighted tracks play; unhighlighted tracks are muted.

Playback device: Each track has a playback device (or a combination of several devices), which can be selected from a pop-up menu by clicking in this column next to the track. Devices in the menu are provided by FreeMIDI.

Edit Bar: Determines the start and end times of the current selection region in any tracks whose names are currently highlighted. Click the values to edit them. Click the words “Start” or “End” to load the current Counter location. Double-click the word “Start” to automatically load the beginning of the sequence; double-click the word “End” to automatically load the end. Double-click the word “Edit” to automatically select the entire length of the sequence. Single-click the word “Edit” to load remembered times.

Loop Indicator: Shows whether a loop exists in the track.

Time Ruler: Displays the location of each segment in any combination of Performer’s three time formats: measures | beats | ticks, SMPTE time, or real time.

Memory-cycle loop points: These repeat barline icons indicate the points where the entire sequence will loop when the Memory-cycle button is highlighted.

Sequence Name: Displays the name of the sequence. A Performer file can contain any number of sequences, each with their own Tracks window. Command-click to switch between sequences.

Time Zoom Buttons: Zooms in the Time Ruler so that each segment represents a smaller or larger duration. For example, in the Quick Reference diagram, each segment currently represents one *measure* of music. Clicking the Zoom In button will cause each segment to represent one *quarter note* (480 ticks). Other zoom-in levels are: 240, 120, 60, and 30 ticks per segment. Other zoom-out levels are: 4, 8, and 16 measures per segment.

High-Density Track Segment: Indicates that the segment contains more than 10 MIDI events. Segments can display several degrees of data density. The threshold between density levels can be adjusted with the *Set Density Threshold* mini-menu command.

Empty Track Segment: Indicates that the segment contains no MIDI data.

Window Divider: Separates the Tracks list from the Tracks Overview. Drag the divider left to see more of the Tracks Overview or right to see more of the Tracks List, comments, etc.

Track Comments: Display remarks that you can type in for the track. To enter or change a comment, simply click on it and enter or edit the text. Press OK or the Enter key to confirm your entry, or press the up or down arrow keys to confirm your entry and move to adjacent tracks, or press Cancel or command-period to cancel it.

Current Patch: Displays the name of the currently selected patch (sound) for the Device.

Default patch: Displays the name of the patch that will initially be called up when the sequence starts playing. This is saved with the file.

Conductor Track: A special track that contains the tempo map, meter changes, and key signatures for the sequence. The Conductor track also contains Markers. Data in the Conductor track can be edited just like MIDI data in regular tracks.

Tracks Window Mini-menu

Playback Device: Displays the playback assignment for the track. The list of devices matches your MIDI studio. Device names are set up in the FreeMIDI Setup software.

Play-Enable button: Enables or disables a track for playback. To toggle its play status, simply click the button. Any number of tracks may be play-enabled. Most commonly, all tracks will be play-enabled. When solid black, the track is play-enabled and will be audible. If hollow, the track will be muted or silent. If muted, the data for the track is still there; you are just “turning off” the track during playback.

Record-Enable button: Selects a track for recording. In normal recording mode (MultiRecord off), only one track may be recorded into at once; when you record-enable a track, the previous record-enabled track will be automatically disabled. Record-Enable buttons are only present if the sequence is selected for playback in the Chunks window or it is record-enabled in a Song window.

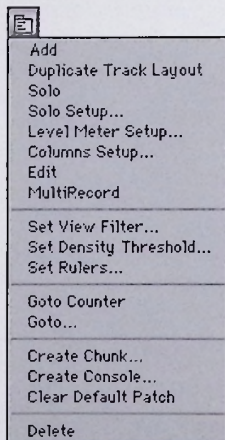
Move Handle: Drag up or down to change the position of a track in the tracks list.

MIDI Activity Meters: Indicate the intensity of MIDI playback coming from the track. They monitor either note-on velocities or amount of data. When monitoring amount of data, level meters monitor any type of data.

Add: Adds a track to the track list. There is no limit to the number of tracks you can add. Hold down the option key while choosing Add to add more than one track at a time. New tracks are added to the bottom of the list or just below the currently highlighted track name.

Duplicate track layout: Selecting a track or multiple tracks and choosing this command duplicates the selected tracks and their playback assignments. The word *copy* is appended to each new track's name. This command does not copy the data in the track; instead, it copies only the track's name and playback assignment. Use the option key while selecting the command to make more than one duplicate copy.

Solo: Enables Solo mode. In Solo mode, only tracks whose names are highlighted will play. To disable Solo mode, choose Solo again to uncheck it.



Solo Setup: Calls up a dialog box that lets you configure solo mode. Solo mode can be configured so that muted tracks are not muted all the way. Instead, their volume is brought down part way by reducing their note-on velocities by a percentage that you choose.

Level Meter Setup: Provides several different ways to configure the level meters. See "Configuring the MIDI level meters" on page 193.

Columns setup: Lets you choose which columns to show and hide in the Tracks list.

Edit: Opens the Event List for the currently highlighted tracks.

MultiRecord: Enables MultiRecord mode. In MultiRecord, more than one track can be record enabled at a time with a separate record channel for each one. To disable MultiRecord mode, choose the MultiRecord menu item to uncheck it.

Set View Filter: Calls up a dialog box in which you specify types of events to be visible in the Tracks Overview window. The View Filter applies to all tracks and the Event List, Graphic Editing, and QuickScribe notation windows.

Set Density Threshold: Calls up a dialog box in which you specify the difference between low-density and high-density track segments. The default value is 10 MIDI events. You can set the threshold to any value between 1 and 999.

Set Rulers: Allows you to configure the Time Ruler in any combination of Performer's three time formats: measures | beats | ticks, SMPTE time, or real time. The main ruler is displayed lowest.

Goto Counter: Scrolls the graphic display to the time currently displayed in the Counter. The counter location will appear at the left-most position in the window.

Goto: Scrolls the graphic display to a time you specify, which will appear at the left-most position in the window.

Create Chunk: Creates a sequence chunk made up of the currently selected segments and places it at the end of the list in the Chunks window. In the new sequence, the earliest selected segment will be placed at measure one.

Tracks Window Basics

Opening a New Tracks Window

Create Console: Creates a Slider console for the currently selected tracks. A dialog box will appear asking what type of console, e.g. volume, pan, etc.

Clear default patch: Removes the default patch assignment in the Default patch column for the currently selected tracks.

Delete: Removes the currently selected tracks from the Tracks window.

A track in Performer stores a series of MIDI events within a sequence. Each sequence contains its own set of tracks. Performer allows you create as many tracks as you like, each holding a separate stream of MIDI events. The only limitation to the number of tracks is the amount of random access memory in your computer. (We've seen some sequences with over 300 tracks!)

The Conductor Track is the exception; it stores meter, key, tempo, and marker information. For more information, see the chapter *The Conductor Track*.

In Performer, MIDI data is stored in the track without channel information. Instead, each track in Performer can be assigned to one or more MIDI channels. During playback, or while recording using the auto-channelize Patch Thru feature, the MIDI data in the track is sent out through the assigned channels. Any MIDI instrument that is listening to (receiving on) that same channel will respond to the MIDI information it receives.

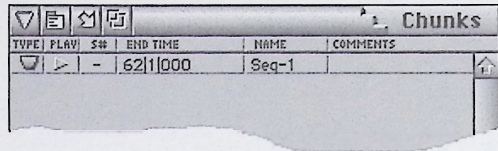
In summary, each sequence in a file has its own Tracks window, which lists all of the tracks in the sequence. Each track has a MIDI channel assignment consisting of one or more channels. The data in the track is played on whatever the playback channels the track is assigned to.

When you select New from the File menu, a new file containing a single sequence is created. (See the *Working with Files* and *Chunks Window* chapters for more information.) The Tracks window for this new sequence is already open by default.

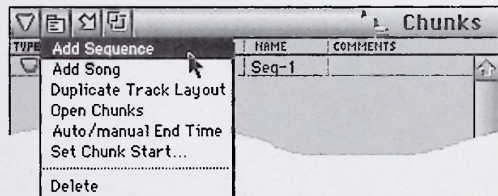
If you wish to add another sequence and display its track window:

1. Open the Chunks window by choosing *Chunks* from the Windows menu.

The Chunks window appears:



2. Choose *Add Sequence* from the Chunks window mini-menu.



A new sequence appears in the Chunks list.

3. Double-click the name of the new sequence.

A new Tracks window will appear for that sequence. The name of the sequence will appear in the title bar of the window.

To open a new file with a new, empty sequence:

1. If a file is open, close it by choosing *Close* from the File menu.
2. Choose *New* from the File menu.

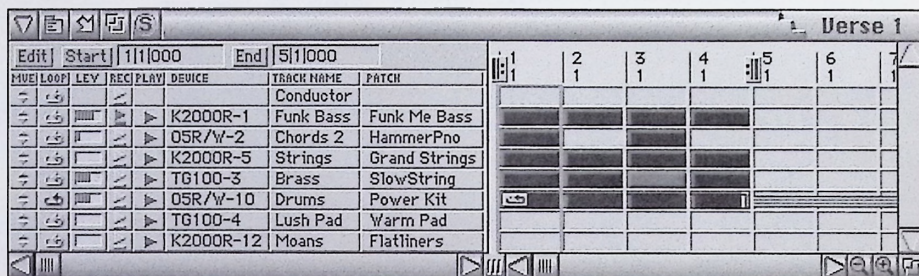
A new file opens with one sequence and a Tracks window for that sequence.

The Tracks List & Overview

The Tracks window is divided into two portions: the Tracks List on the left and the Tracks Overview on the right. This section discusses the Tracks List. The Tracks Overview is discussed later in the chapter.

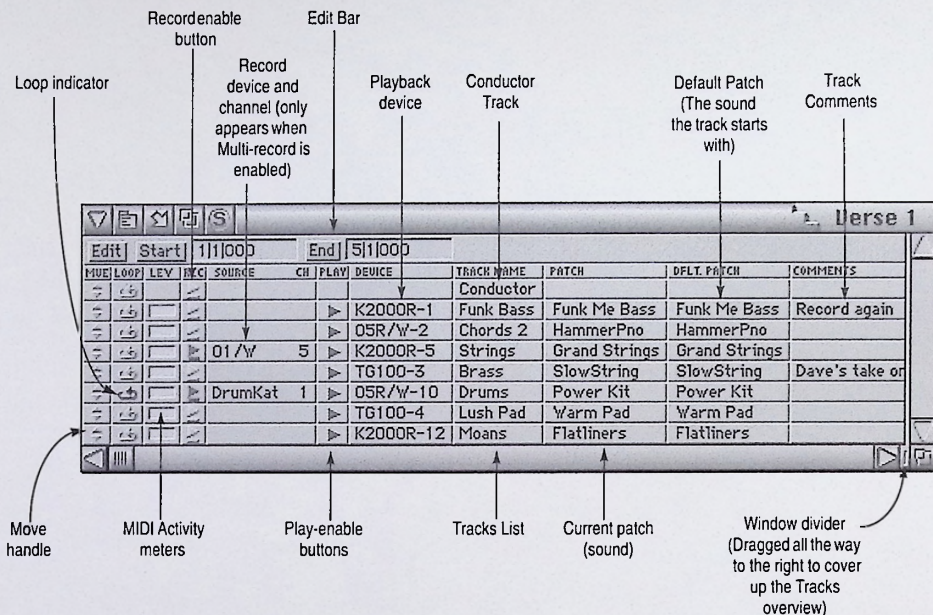
Tracks List

Tracks Overview



Tracks List Quick Reference

The Tracks List provides a list of all the tracks in the sequence. In addition, it provides useful information about each track, such as what MIDI devices the track is playing on. This information is shown in the same row as the track.



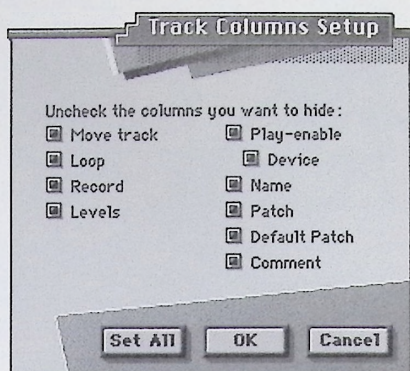
Hiding Columns in the Tracks List

Even though The Tracks List has a lot of columns of information in it, you can completely customize the display to suit your tastes. You can hide columns you don't need to look at, and you can rearrange the order of the columns. For example, if you don't have any comments, you don't need to display the column.

To hide or show columns in the Tracks List:

1. Choose **Columns Setup** from the Tracks window mini-menu.

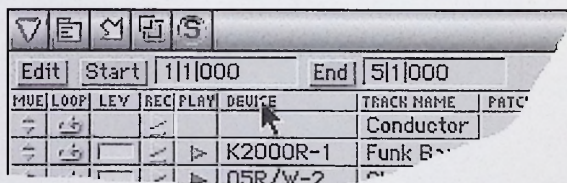
As a shortcut, you can double-click any column heading instead. The column Setup window appears.



2. Uncheck the columns you want to hide, and check the ones you want to see.
3. Click OK.

Rearranging the order of the columns

You can rearrange the order of the columns simply by dragging the title of the column left or right.



See "Customizing the Tracks Window" on page 192 for an example of a more compact, customized Tracks List.

The Move Handle

The Move Handle allows you to shift the position of a track in the tracks list. Use it to rearrange the tracks in an order that is most useful to you. To use the Move Handle, press on it and drag the track where you want it to go. A dotted outline of the track will follow your mouse movements. The track will be moved to the position in the

The Loop Indicator

MIDI Activity Meters

The Record-Enable Button

The Record Device

tracks list where you release the mouse. If you drag the track above the top or below the bottom of the Tracks List, it will scroll until it reaches the top or bottom of the list.

This column displays a loop icon if the track contains one or more loops.

The MIDI Activity Meters act very much like the level meters on a tape deck: when there is signal on the channel, the level meter registers the signal. Similarly, at the moment the track is playing MIDI data, the MIDI activity meter registers the outgoing MIDI data.

You can configure how the level meters operate. For details, see “Configuring the MIDI level meters” on page 193.

The Record-Enable button selects a track for recording. In normal recording mode (MultiRecord off), only one track may be recorded into at once; when you record-enable a track, the previous record-enabled track will be automatically disabled. Record-Enable buttons are only present if the sequence is selected for playback in the Chunks window or it is record-enabled in a Song window.

The Conductor Track has a record-enable button, which is used to record tempo information while slaved to Tap tempo synchronization. See the chapter *Receive Sync* and *Tap Tempo While Slaved to Tape* for details on using Tap tempo to record a tempo map in real time.

Normally, the record-enabled track will record data from all channels. In MultiRecord mode (set in the Tracks window mini-menu), you can record from individual MIDI device on a particular MIDI channel into a particular track. This lets you record into several independent tracks from several independent sources all at once. Each track has its own incoming MIDI device and channel number displayed next to its Record-Enable button. Recording channel assignments are only present in MultiRecord mode. See the *Recording* section for details about using MultiRecord.

The Recording Channels display consists of a device name followed by a channel number. Click them to change them. If the record device is blank, click in the blank space next to the record button to open a pop-up menu of devices. You can select only one device and channel for each track.

The Play-Enable Button

The Play-Enable button readies a track for playback. To toggle its play status, simply click the button. Any number of tracks may be play-enabled. Most commonly, all tracks will be play-enabled. When blue (or solid black on a black and white screen), the track is play-enabled and will be audible. If gray (or hollow on a black and white screen), the track will be muted or silent. If muted, the data for the track is still there; you are just "turning off" the track during playback. The Play-Enable button turns grey when the track is temporarily muted due to Solo mode. The Conductor track contains no standard MIDI data, therefore it has no Play-Enable button.

To Play-enable all tracks except for one, command click its play-enable button. To play-enable only one track and unplay-enable all others, option-click the track's play-enable button. This convention also applies to track record-enable buttons in Multi-record mode, the Sliders window record-enable buttons, and the Lock icons in the Markers window.

The Playback Device(s)

The Playback device consists of the name of one of the MIDI devices in your studio followed by a dash and a MIDI channel number (between 1 and 16). It can also consist of several devices.

For information about how to change playback assignments, see "Choosing a device for playback" on page 111.

For information about how to assign a track to more than once device at a time, see "Choosing multiple playback devices for a single track" on page 112.

For information about how to add, remove, or rename devices in the list, see "Changing your playback device list" on page 114.

The Track Name

To change the name of a track, click it while holding down the Option key. A box will pop up: click in it and use the Macintosh keyboard to edit the name. To confirm your change, press the Return key. To cancel the change, press the Command and period keys. You

The Conductor Track

The Current Patch

must do one of these two things to terminate track name editing (otherwise, the pop up box will remain.) Use the Enter or down arrow key to OK the name change and move to the next track in the list. Use the up arrow key to OK the name change and move to the previous name in the list. The Conductor Track's name cannot be changed.

The conductor track contains meter changes, tempo changes, key changes, and markers. See the Conductor track chapter for more information.

This column displays the name of the currently selected patch for the Device that is assigned to the track. If a patch has not been selected, no patch name appears in the column.

- ☛ The FreeMIDI option called *Monitor Patch Changes* in the FreeMIDI Setup Preferences command affects this column. When the option is turned on, this column will show the current patch change sent by any FreeMIDI application. If it is unchecked, it will not give you a running update of the current patch, even with patch changes sent from Performer.

To select a patch for a track, click in the patch column next to the track and select the desired patch from the pop-up menu provided. Its name then appears in the column.

If you have patch changes in the track, the Device Patch column will update during playback to show the current patch (and the *Monitor Patch Changes* command is turned on in FreeMIDI Setup).

The list of patches you see in the pop-up menu in this column is provided by FreeMIDI. By default, the factory default sounds names for most popular synths are provided. In some cases, patches are given the generic name "Patch-1", "Patch-2", etc. However, you can use the PatchList Manager program, Unisyn, or any other FreeMIDI compatible librarian software to provide the actual names of the sounds in each one of your MIDI instruments. See chapter 48, "Using PatchList Manager" (page 725) for details.

The Default Patch

The Default patch is the patch the track always begins with. It is remembered when you save the Performer file so that the next time you open the file and press play, the default patch is called up from the synthesizer before playback begins so that the track will play with the correct sound.

To select a default patch for a track, click in the default patch column next to the track and select the desired patch from the pop-up menu provided. Its name then appears in the default patch column.

The list of patches in the pop-up menu is provided by FreeMIDI. As mentioned in the previous section, this list can display the actual sound names in the synth if you use PatchList Manager, Unisyn, or any other FreeMIDI-compatible librarian software.

The Comment

The Comment is a remark that you can display for the track. It is simply a space for text that you can use for whatever purposes you wish. To enter or change a comment, click on it and enter or edit the text. Press OK or the Enter key to confirm your entry, or press Cancel or command-period to cancel it. As much of the comment as possible is displayed in the Tracks window. If you wish to see the entire comment, click on it. The comment box will appear. Press the Enter key to get rid of the box. When entering or editing a comment, the Return key starts a new line of text instead of approving the changes as usual in Performer's user interface.

You can edit the comments for each track in succession: after bringing up a comment box, press the down arrow key to approve the changes you've made and move to the comment for the next track. The up arrow key likewise moves to the comment for the previous track.

The Scroll Bar

The horizontal scroll bar allows you to scroll the Track List display when part of it is obscured by the Tracks Overview.

The vertical scroll bar allows you to scroll up and down through the Tracks List. Clicking or pressing the Scroll Arrows scrolls by single tracks. Clicking the grey part of the bar scrolls by several tracks at once. Use the scroll box to move to a particular location in the track list.

The Window Divider

The Window Divider separates the Tracks List from the Tracks Overview. You can then drag the divider handle (at the bottom) left or right to resize each portion of the window proportionally. If you drag all the way to the right, the scroll bar disappears (the divider remains).

The Grow Box

The Grow Box allows you to resize the Tracks window. It works just like a regular Macintosh window grow box: press and drag it to change the size of the window.

Soloing Tracks

Soloing tracks allows you to isolate tracks for playback. Only selected tracks (i.e. those that are highlighted) will be audible when Solo is on. This is a quick way to temporarily mute or unmute many tracks at once without having to click on the Play-Enable buttons of each. Solo is turned on and off from the Tracks window mini-menu or by pressing the solo button in the Tracks window title bar; its status can be changed during playback. You may also select and deselect tracks during playback to change the solo group.

Individual tracks can be soloed when their edit window is open (Event List, Graphic Editing, or QuickScribe notation window) by pressing the solo button in the title bar.

Tracks chosen for soloing must be play-enabled. If the current Tracks window is deactivated (for instance, if another window such as the Counter window is activated), the solo tracks remain in effect during playback even though the tracks lose their highlighting (unless a track edit window becomes active, in which case it becomes soloed). The highlighting will return when the Tracks window is activated again. If the Tracks window is closed, solo is automatically turned off. Tracks which are temporarily muted due to soloing have orange Play-Enable buttons (or grayed-out buttons on a black and white screen).

When tracks are muted during soloing, Performer continues to process the MIDI data contained in them. This allows tracks to be soloed and unsoloed during playback without pauses or glitching. If you want to entirely turn off tracks during playback, deselect their Play-Enable buttons. To solo tracks:

“Partial-solo” mode

1. **Select the tracks you wish to solo by clicking on their names.**

You can change track selection during playback. Use Shift-click to select non-contiguous tracks.

2. **Press the Solo button in the Tracks window title bar.**

The Solo button becomes highlighted.

3. **To turn Solo off, click the Solo button again.**

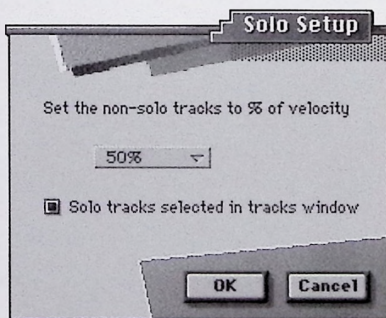
You can turn Solo on and off during playback.

The solo command (and button) provides an additional capability: “partial solo mode”. In this mode, tracks that are being muted are not muted all the way. Instead, their volume is brought down part way by reducing their note-on velocities by a percentage that you choose.

To enable partial-solo mode:

1. **Option-click the “S” button in any Edit window title bar, or choose “Solo Setup” from the Tracks window mini-menu.**

The Solo Setup dialog appears.



2. **Choose a percentage from the pop-up menu.**

The value you choose is the percent that note velocities in each muted track will be reduced to when muted. (Velocities are not permanently changed; they are only modified temporarily during playback.)

3. If desired, check the “Solo tracks selected in Tracks window” option.

This option determines what is soloed when you are editing a track in an event editing window (i.e. an Event List, Graphic Editing, or QuickScribe notation window is open and active). When this check box is *unchecked*, the solo button in event edit window title bar solos the track you are editing. When this option is *checked*, the solo button in the event edit window solos the tracks that are currently selected in the Tracks window (instead of just the one track you are editing).

4. Click OK.

Now, when you click the solo button, muted tracks will be lowered in volume instead of being totally silenced. To bring them back up, just unmute.

To disable “partial-solo” mode, option-click the solo button and set the pop-up menu to “Off”.

Adding Tracks

You can add as many tracks as you wish to the track list. When a track is added, its name will be “Track-*n*”, *n* being a number.

To add a new, empty track, simply choose Add from the Tracks window mini-menu and the new track will appear on the track list. To add several tracks at once, hold down the Option key while choosing Add. You will be prompted for the number of tracks to add.

When you use the *Add* mini-menu command in the Tracks, Chunks, or Sliders windows, Performer adds the new item to the bottom of the list. However, if you would like to add an item to a spot in the middle of the list, simply highlight an item in the list first. When you use *Add*, the new item will be added just beneath the highlighted item.

This can also be done with the *Duplicate* mini-menu command in the Sliders window.

Duplicating Tracks

You can add new, empty tracks by duplicating existing tracks. To duplicate one or more tracks:

1. Select the desired track(s).

See “Selecting Tracks” on page 180.

Selecting Tracks

Deleting Tracks

Looping Tracks

2. Choose Duplicate track layout from the Tracks window mini-menu.

The duplicate track appears in the Tracks window with the word *copy* is appended to its name. This command does not copy the data in the track; instead, it copies only the track's name and playback assignment.

If you would like to make more than one duplicate, hold down the option key while choosing Duplicate Track Layout from the mini-menu. A dialog asks you how many duplicates you would like. Enter the desired number and click OK (or press return).

If you want to select a region in a track, change a track name, or delete a track, you must first select the track. There are several methods for selecting tracks:

To select a single track, click on its name. It will highlight.

To select several adjacent tracks, press on a track name and drag over the desired names. All tracks dragged over will highlight.

To select several non-adjacent tracks, hold down the Shift key and click on the names of the tracks you wish to select. They will highlight.

To deselect tracks when more than one are highlighted, hold down the Shift key and click on the tracks you wish to deselect. They will unhighlight.

To select an extended number of tracks, click on a track name, press and drag over the tracks you want to select. The track list will scroll, selecting all tracks dragged over.

To delete a track, select it by clicking on its name and choose Delete from the Tracks window mini-menu. The track will disappear from the track list. Delete several tracks at once by selecting them all before choosing the Delete command. When a track is deleted, all of its data is gone. You can undo the Delete command.

Each track can be looped independently. If there are loops in a track, the looping indicator is visible in the Tracks Overview. For a detailed discussion of loops, see the *Looping* chapter.

Opening an Event Editing Window for a Track

The Event Editing windows contain a display of all events in a track. Each track has four event editing environments to choose from: the Event List window, the Graphic Editing window, the Notation Editing window, and the QuickScribe notation window. In these windows the time, event type and specific event information (on and off velocities, controller values, duration, etc.) for each event are expressed numerically, graphically, or as music notation. You can edit, add and delete events in these windows as well as select regions of events to be modified by commands from the Region menu.

To open an Event Editing window from the Consolidated Controls window: highlight the track name and click the Event List, Graphic Editing, or QuickScribe notation button in the Consolidated Controls Panel to open the desired window. Or click a track name or track segment as follows:

Do this

Double-click

Command double-click

Option-command double-click

To open this

The event list (or whatever you have set in the Preferences command—see below)

Graphic Editing window

Notation Editing window

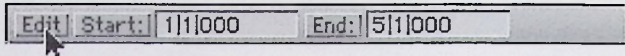
For your convenience, the Preferences command in the File menu lets you decide which window opens when you double-click a track. For more information, see “Preferences” on page 680.

For a detailed explanation of event editing in the Event List, Graphic Editing, and QuickScribe notation windows, see the *Event List Window*, *Graphic Editing*, and *Notation Editing* chapters.

Using the Edit Bar

The Edit Bar holds the starting and ending locations for a region. To enter a starting location, click in a field in the Start time and enter a value; to enter an ending location, click in a field in the End time and enter a value. You can use the Tab key (or decimal point key on the keypad) to cycle through the measure|beat|tick fields.

There are several quick ways to load times into the Edit Bar.



Clicking on the word "Edit" loads remembered times into the Edit Bar. To "remember" a pair of Start and End times, activate the window containing the times and choose Remember Times from the Basics menu (or press command-R). Times are remembered for each type of window as follows:

- *in a Markers window*, the times of the first and last highlighted markers are remembered.
- *in an Event Editing window*, the times of the first and last highlighted events are remembered.
- *in a Tracks window*, the times in the Edit Bar are remembered.
- *in the Consolidated Controls panel*, the times in either the Memory or Auto Record bar are remembered, whichever is visible.

Clicking on the word "Start" enters the current time as displayed in the Counter window as the Start time. Clicking on the word "End" enters the current time as displayed in the Counter window as the End time.

Double-clicking on the word "Start" enters the beginning time of the sequence as the Start time. Double clicking on the word "End" enters the end time of the sequence as the End time.

Double-clicking on the word "Edit" set the Start and End times to the beginning and end of the sequence. This is equivalent to double clicking on both the "Start" and "End" words.

This method of region selection allows you to select a region containing several tracks at once.

1. **Click the Tracks window of the sequence you wish to modify to activate it.**

Selecting a Region Using the Tracks List

2. Enter the Start time of the region in the Edit bar.

See the preceding section, *Using the Edit Bar* for details on entering the Start time in the Edit Bar.

3. Enter the End time of the region in the Edit Bar.

See the preceding section, *Using the Edit Bar* for details on entering the End time in the Edit Bar.

4. Select the track or tracks that contain the region.

Consult the *Selecting Tracks* section above for the details about track selection. The region is now selected in all the highlighted tracks.

Events occurring *on* or *after* the Start time and *before* the End time will be affected by a region command. For example, in 4/4 time, if the Start time is 9|1|1000 and the End time is 13|1|1000 all events starting on the very first tick of the first beat of bar 9 through the very last tick of the fourth beat of bar 12 (12|4|479) will be modified. An event occurring directly on 13|1|1000 (the very first tick of the first beat of measure 13) will not be modified.

The Conductor Track

The Conductor track is a special track containing markers, meter, tempo and key change information. Every sequence always has a Conductor track; it cannot be deleted. In the Tracks window, the Conductor track has a Move Handle and Comments. The Conductor track cannot be looped. Certain editing commands can be used on the Conductor track. For more information, see the chapter called *The Conductor Track*.

Creating a Slider Console from the Tracks List

A convenient way to create consoles is with the *Create Consoles* command in the Tracks window mini-menu. This command can automatically create volume, pan, modulation, and other consoles all at once for the tracks you select.

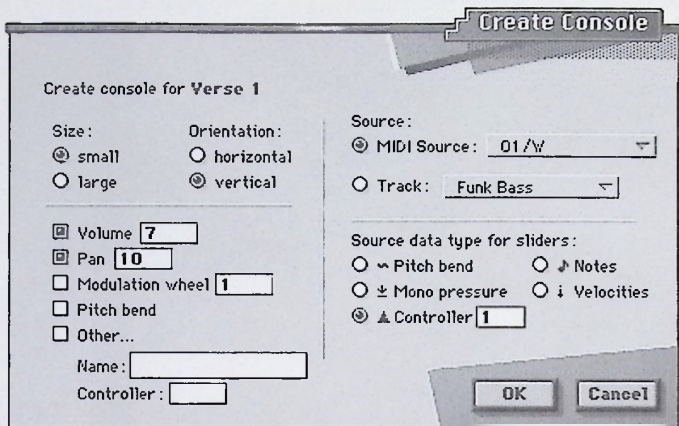
To create one or more consoles from the Tracks window:

1. Highlight the Track(s) for which you wish to make consoles.

Click each track name to highlight it. Shift-click to select tracks not next to one another.

2. Choose Create Consoles from the Sliders window mini-menu.

The Create Consoles dialog box appears.



3. Select the dimensions, type, and (optionally) the source setup of the sliders for each console.

You can create more than one type of console. You can even enter a custom console name and data type using the *Other* option.

4. Click OK to create the console.

The Console is created and its name is added to the Windows menu.

Tracks List Hints

There is a difference between using Solo and the Play-Enable Button to turn off a track. If a track is muted with Solo, Performer continues to scan through the data for that track so that it may resume playback of the track at any moment. If the Play-Enable Button for a track is disabled, the data for that track is not scanned during playback, resulting in slightly less overhead for the computer. Disabling tracks may thus result in slightly better performance in playback. If one or more tracks are not needed for a particular playback pass, it is best to

disable them. A pertinent example is transferring tracks to a multi-track tape recorder one at a time: rather than using Solo to mute the other tracks, use the Play-Enable buttons to enable one at a time. There may be an audible glitch if you re-enable a track during playback.

It is easier to split drum and percussion parts into separate tracks because you can quickly and easily select them individually. If all the drums are in one track, you have to go into the Graphic Editing window to select individual drum parts (snare, bass, high hat, etc.) By splitting them into separate tracks, you can simply highlight the track name and do your editing. You can split them easily either during recording or afterwards with the Split Notes command.

The Tracks Overview

The Tracks Overview portion of the Tracks window provides you with a global view of the MIDI data in a sequence. It is useful for arranging parts among tracks, using edit commands such as Cut and Paste, and other region operations that affect more than one track at a time. It allows you to view and edit the data in your sequence all at once instead of one track at a time.

Basics

The Tracks Overview divides each track into equal-length segments, which can be zoomed to show as much as 16 measures per segment or as little as 30 ticks. Each segment displays how much data is present in that segment. Blank segments contain no data. Purple segments (or gray ones on a black and white screen) contain between 1 and 9 MIDI events, and dark purple (or black) segments contain 10 or more events. The threshold between low-density and high-density segments (10 events) can be adjusted with the *Set Density Threshold* mini-menu command.

The Time Ruler shows the time span of each segment.

Segments can be selected for editing by commands from the Edit and Region menus. In addition, Event Editing windows can be opened from the segment by clicking as described in the next section.

Scrolling During Playback

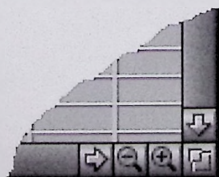
The *Auto-Scroll* command in the Basics menu can make the Tracks Overview window scroll during playback. In addition, the window will automatically open to the current playback location of the

Opening an Event Editing Window From a Segment

The Time Ruler

Using the time ruler to select a playback point

Zooming



sequence. A scrolling “wiper” can be displayed as well to indicate the current playback location. Please refer to the *Auto-Scrolling* section in the *Playback* chapter for more information.

The contents of a track segment can be view with any of Performer’s three Event Editing windows. To open a window double-click the segment as shown below:

To open this:

Event List

Graphic editing

Notation editing

Do this:

Double-click (depending on how you’ve set the preferences—see below)

Command double-click

Option-command double-click

For your convenience, the Preferences command in the File menu lets you decide which window opens when you double-click a track. For more information, see “Preferences” on page 680.

The Time Ruler displays the time of each segment in any one of Performer’s three time formats. To change time formats, choose Set Rulers from the mini-menu.

You can double-click a segment in the time ruler to make Performer jump to that location for playback. You can do so when Performer is stopped or during playback. This is an ideal way to quickly locate to a desired point with the mouse.

Zooming the Time Ruler in the Tracks Overview changes the amount of time shown in each segment. If you zoom out, each segment represents a longer duration, resulting in a more global view of the sequence. If you zoom in, each segment represents a shorter duration, allowing for more detailed work.

The Tracks Overview window defaults to showing one measure per segment. Zoom-Out levels zoom up to 2, 4, 8, and 16 measures per segment (regardless of meter). Zoom-In levels zoom from 1 measure down to a quarter note (480 ticks), an eighth note (240 ticks), a sixteenth note (120 ticks), a thirty-second note (60 ticks), and a sixty-fourth note (30 ticks).

Selecting Segments for Editing

To zoom in, click once (or repeatedly) on the magnifying glass with the plus sign (+). To zoom out, click once (or repeatedly) on the magnifying glass with the minus sign (-).

To edit the data in a segment, you must first select the segment. When a segment is selected, it highlights, and its contents can be edited with any Edit menu or Region menu command.

Segment selection is exclusive from track name selection in the Tracks List. If you select segments, any highlighted track names will deselect.

Below are several convenient shortcuts for selecting segments:

To select a single segment, click it.

To select several adjacent segments, drag over them. If the segments are in several adjacent tracks, drag over them in a diagonal fashion.

To select several non-adjacent segments, hold down the Shift key and click the segments you wish to select. They will highlight.

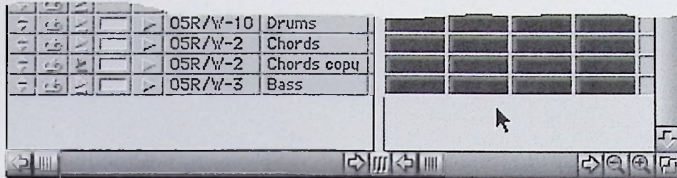
To deselect segments when more than one are highlighted, hold down the Shift key and click the segments you wish to deselect. They will unhighlight.

To select a segment in all tracks, click the segment in the Time Ruler. All segments beneath will highlight.

To select one or more segments in all tracks, drag in the Time Ruler.

After you select one or more segments, Performer loads the start and end times of the region into the Edit bar for convenient selection in the Tracks List.

Clicking anywhere below the tracks in the Tracks Overview deselects all currently selected segments.



Using the View Filter

The View Filter allows you to choose what types of MIDI events are displayed in the Tracks Overview window. For example, if you would momentarily like to see which segments contain patch changes, you can open the View Filter and option-click the patch change check box (to select it and deselect all others). With only patch changes selected, only segments that contain a patch change will become grey. As you can see, the View Filter can be an effective tool for working with only a few types of data at a time. The View Filter affects all Event Editing windows as well as the Tracks Overview window.

The View Filter also determines which types of events are affected by Edit menu commands when the data is selected in the Tracks Overview window. Here's a simple rule to remember: if you can see data in the Tracks Overview window, it will be affected by edit commands.

Please note that Conductor track data such as Markers and Meter changes, which are displayed in the Event Edit windows of regular tracks, are displayed only in the Conductor track in the Tracks Overview.

To use the View Filter from an Event List window:

1. **Choose Set View Filter from the Event List mini-menu.**

A dialog box will appear.

Setting the Density Threshold

Setting a Loop in the Tracks Overview

2. **Choose the data types to be displayed by checking the box for each.**

You can choose all types of data at once by clicking on the "Set All" button. You can uncheck all the check boxes by clicking on the "Clear" button. Option-click to check only the check box you click on, unchecking all others; command-click to check all boxes except the one you click on. Use the *Controllers* option to specify which controller information is displayed.

3. **Press OK to confirm your choice or Cancel to cancel it.**

When using the View Filter, keep these rules in mind: The View Filter settings you select will stay in effect until you change them. They affect all open Event Editing windows. The View Filter settings will affect all edit operations done in the Event Editing windows.

The *Set Density Threshold* mini-menu command allows you to specify the difference between low-density and high-density track segments. The default value is 10 MIDI events, so that a segment containing between 1 and 10 MIDI events will appear purple (or gray on a black and white screen), and a segment containing 10 or more will appear dark purple (or black). You can change the 10-event threshold to any value between 1 and 999 events.

In general, the lower the threshold value, the easier it is for Performer to count events and display segments. Higher thresholds may cause Performer to redraw the segments a little more slowly. However, if you have a fast Macintosh (68020 or 68030 CPU), you probably won't notice much of a difference between low and high thresholds.

To set a loop in the Tracks Overview:

1. **Select the segments that you wish to loop.**

Drag over them. You can select segments in more than one track if you like. If you select different time regions in more than one track, the loop region will in every track will be the earliest selected time to the latest selected time.

2. **Choose Set Loop from the Change menu or click the Loop button in the Consolidated Controls window.**

The Set Loop dialog box will appear.

Creating Sequence Chunks

3. **Choose the number of times that you would like the loop to repeat.**
4. **Click OK to create the loop or Cancel to withdraw the loop command.**

The Create Chunk mini-menu command in the Tracks Overview window takes selected segments in the Tracks Overview window and turns them into their own sequence Chunk in the Chunks List window.

The Create Chunk command makes it easy to break up a sequence into separate pieces (Chunks) in order to rearrange them more freely in a Song window. For example, let's say that you have built several phrases that are a few bars long in a Sequence. But now you want to rearrange them and try different combinations. To do so, you can select the segments of a phrase and choose Create Chunk from the mini-menu for each one. Then, you can drag the resulting sequence Chunks from the Chunks list window into an empty Song window to try different orders and combinations.

Once you have arranged the Song as you like, you can even convert it back into a sequence using the Song window mini-menu command called Merge Chunks to Sequence. This command takes the separate Chunks inside the Song window and reduces them to a single sequence Chunk.

At any time, you can take your music freely back and forth from Sequence form to Song form with these two commands to help you create your music.

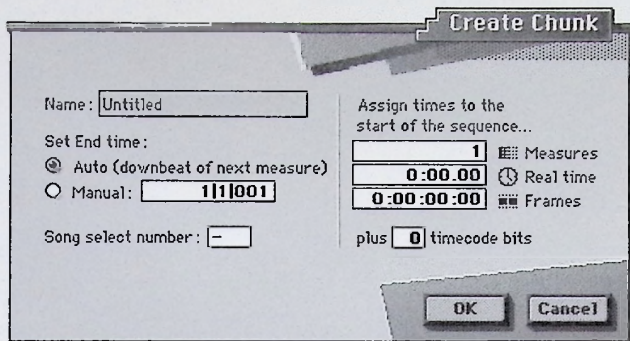
To create a sequence Chunk from the Tracks Overview window:

1. **Select the Segments that you wish to be in the Chunk.**

Alternately, you can select the region from the Tracks List by highlighting track names and setting a region in the Edit bar. See the section earlier for information about selecting segments. You can even select non-adjacent segments.

2. **Choose Create Chunk from the Tracks Overview window mini-menu.**

A dialog box appears.

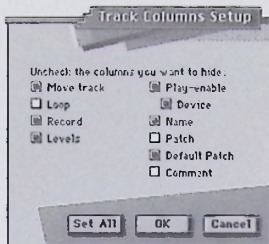


3. Type in a name for the Chunk.
4. Type in an End Time to determine the length of the Chunk.

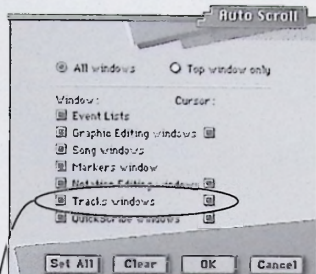
By default, the end time is determined by the length of the selected region.
5. (Optional) Type in any other information you wish about the Chunk.
6. Press OK to confirm your choice or Cancel to withdraw the command.

Customizing the Tracks Window

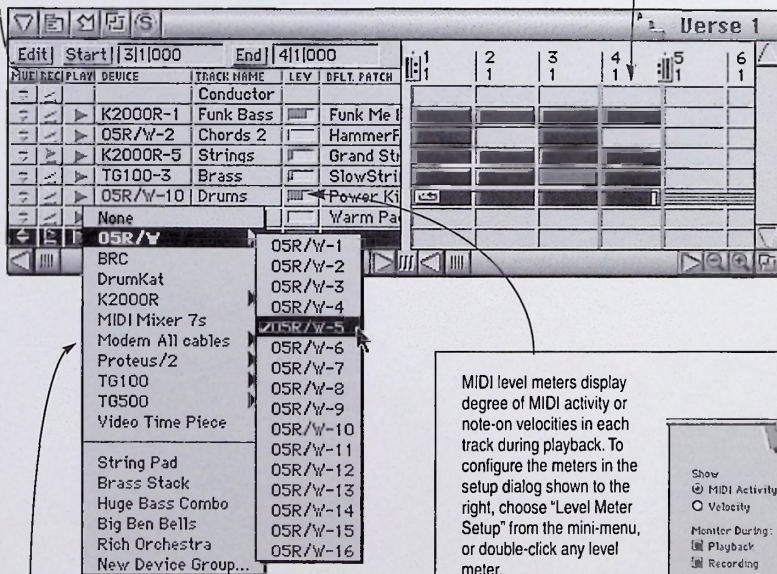
The Tracks window can be completely customized. This allows you to set it up in the way that best suits the way you work. The diagram below summarizes what you can do.



Double-click the column headings to open the dialog box shown to the left (or choose "Columns Setup" from the mini-menu), which lets you choose the columns you want to see. Below, only the record-enable buttons, playback assignment, track names, and MIDI level meters are displayed. The rest of the columns are being hidden. Reorder the columns by dragging the column heading left or right.



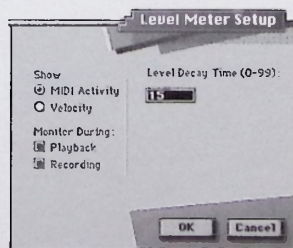
These Auto Scroll options (Basics menu) produce this scrolling highlight, which clearly indicates track playback position in the Tracks Overview.



The devices that appear in this list are provided by FreeMIDI. You can customize your FreeMIDI device configuration to exactly match your MIDI studio. You can even make customized device groups.

MIDI level meters display degree of MIDI activity or note-on velocities in each track during playback. To configure the meters in the setup dialog shown to the right, choose "Level Meter Setup" from the mini-menu, or double-click any level meter.

For details about these options, see "Configuring the MIDI level meters" on page 193.



Configuring the MIDI level meters

The MIDI level meters in the Tracks window can be configured in several ways. To set these options, double-click any level meter (or choose Level Meters Setup from the mini-menu) to open the Level Meters Setup dialog box shown below. Settings in this dialog box are global across files and are automatically saved in the Performer Preferences file in the System Folder.



Showing MIDI activity or velocity

Level meters can show either MIDI activity or velocity. With MIDI activity, the meter is triggered every time a MIDI event is played back from the track. It can be any type of MIDI data, including notes, controllers, pitch bend, sysex data, etc. With velocity, the level meter reflects the note-on velocity of each note at the instant the note is triggered during playback.

- ✎ MIDI level meters do *not* function like *audio* level meters. For both MIDI activity and velocity, the MIDI level meter is triggered by a MIDI data byte, such as a note-on event or controller, at the time it is played back. The level does not sustain during the duration of the note.

Monitoring

Level meters can monitor MIDI data being played back, recorded, or both. With both options checked, the meters monitor playback when you are playing back, and they monitor recorded material on the

current record-enabled track during recording. If you are in overdub record mode, both recording and playback are monitored at the same time for the record-enabled track.

We recommend using both options because this gives you the greatest amount of feedback about what is going on in your tracks.

Level Decay Time

Level Decay Time refers to how quickly the meters return to zero. The decay amount is expressed as an arbitrary value between zero and 99. For music that consists mostly of sixteenth notes, eighth notes, quarter notes, and longer, try level decay time values between 5 and 20 at tempos between approximately 80 and 160 bpm. If the tempos are extreme, or if notes are particularly dense or sparse, you might find it helpful to use level decay times below 5 or above 20.

In general, shorter decay times are better for fast tempos and/or dense passages of notes. Longer decay times are better for slower tempos and/or sparse passages. If you find that the meters don't stay up long enough for you to see them, try a higher value; lower the decay time if levels go up and then don't change very much. Decay times above 30 are *very* slow and would probably only be useful in extreme cases (very slow music, lighting control sequences, etc.)

Hiding level meters to reduce overhead

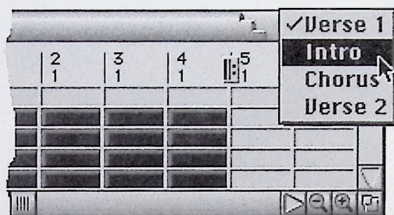
Performer goes to great lengths to preserve the integrity of MIDI playback. Screen display takes a back seat to the more important function of playing back the sequence with as accurate timing as possible. However, the level meters do require some effort from Performer. In some situations, such as running Performer on a slower Macintosh, it may be desirable to hide the level meters to ensure the highest playback performance. The Performer installation guide booklet has a chart that ranks Macintoshes by power and speed. If you have the equivalent of a Mac IIx or above, you shouldn't need to hide the meters, unless you have an unusually large number of tracks—more than a hundred.

To hide the level meters, double-click the track column heading above the level meters (labelled "LEV") to open the Track Columns Setup dialog box as shown on page 192. Uncheck the Levels option.

***Switching to a different
sequence within the
same window***

If you'd rather not hide the meters, another overhead-reducing tactic is to monitor MIDI activity instead of velocities because MIDI activity monitoring requires less effort. Open the Level Meters Setup dialog as explained on page 192 and select the MIDI Activity option.

If you are working with multiple sequences in a file, you can switch between them in the same Tracks window by command-clicking the sequence name in the title bar. A pop-up menu appears from which you can choose the sequence you'd like to see.





Chapter 13 *Looping*



A loop is a region of data in a track that is played repeatedly. The result is similar to using the Repeat command on the Edit menu to insert multiple copies of a region. Instead of actually copying the data, however, the loop feature simply replays the region over and over. Looping is thus more memory-efficient than making repeated copies of a region. Also, making a change in a looped section is easy: instead of changing every repeat of the data as you would if you had copied and pasted it, you simply change the data in the looped region. Tracks or sections of tracks can be looped independently; it is thus possible to build a complex sequence out of a small number of events.

A loop is different from the Memory-cycle button because a loop is a permanent addition to a track. In addition, the loop only loops one track, whereas Memory-cycle loops the entire sequence. For information about Memory-cycle looping, see “The Memory-cycle button” on page 71.

Basics

A loop has three components: a start point, an end point and a number of repetitions. When a loop starts, it plays through its data normally. When the end point is reached, the region is played again from the start point. This cycle repeats for the specified number of repetitions, or indefinitely if an infinite loop is specified.

When the loop finishes its number of repetitions, the next data played will correspond to the location on the Counter. For example, the region from measure 111000 to 411000 is looped four times. After the loop finishes, the Counter will be at measure 13 (four times three measures is twelve: measure 13 comes after measure 12). The data in the track continues playing from measure 13, not from measure 4. If there is any data in measures 4 through 12, it is skipped. The loop takes precedence over any intervening data.

The reason that the data is skipped is so that there is no ambiguity about the current location being played. If the Counter were to display 2011000 and three tracks are playing back data at that spot

and another has finished its looping and is playing back at 15|3|000 and another at 12|2|240 and another at 3|4|000... things could get very confusing. Therefore, the location in the Counter applies to all tracks; it is not affected by loops.

When moving to a location in a sequence, Performer figures out whether any tracks are in the middle of a loop and keeps count of where in the looping process these tracks are. This allows you to begin playing or recording from any location and be sure that the loops will all play correctly.

Notes can be sustained across loop boundaries: if a note is inside a loop, it will always sound for its specified duration.

Tracks and Looping

Each track has its own set of loops. This means that each track can be looped independently of others. The Conductor track cannot be looped. (You can, however, temporarily loop the entire sequence using the Memory-cycle button.)

A loop starts right on its Start time and ends just before its End time. For example, a loop set from 1|1|000 to 4|1|000 would play the data from 1|1|000 to 3|4|479; the next repetition would play the same data immediately at 4|1|000. The number of repetitions equals the total number of times you want the region to play; this includes the first pass.

A loop need not be set on measure boundaries (i.e. on beat one, tick zero of the measure). They can start anywhere in a measure. We'll use loops starting on measure boundaries as examples to keep things clear. In practice, any location is fine.

If you want to set a loop in several tracks at once, just highlight all of the desired tracks at once before you set the loop.

If a track contains loops, a looping indicator appears in the Loop column next to the track name and in the track segment in which it begins. This indicator can't be used to change anything; it is merely a reminder that the track contains loops.

Each track may contain multiple loops. You can even have nested loops in a track, i.e. loops within loops. Here's an example of nested loops, all in the same track:

- Bars 1 to 3 played 8 times (lasting from bar 1 to 17)
- Bars 17 to 19 played 4 times (lasting from bar 17 to 25)
- Bars 25 to 27 played 4 times (lasting from bar 25 to 33)
- Then the whole 32 bar section is looped:
- Bars 1 to 33 played 4 times (lasting from bar 1 to 129)

When bar 33 is reached, bars 1 to 3 will be played another 8 times, bars 17 to 19 another 4 times, and bars 25 to 27 another four times. Then this whole process will repeat twice more until bar 129 is reached.

When Loops Conflict

It is possible to set up loops such that they overlap with each other or otherwise conflict in the same track. When this happens, the first loop in the track takes precedence. When two conflicting loops start at the same time, the one that has a later ending time takes precedence.

Here are some examples of the effects of conflicting loops:

- Bars 1 to 9 played four times, bars 5 to 13 played four times.

The first loop takes precedence. Bars 1 to 9 are played and the loop repeats back to bar 1. The second loop is ignored.

- Bars 1 to 17 played four times, bars 1 to 3 looped infinitely.

Bars 1 to 3 are played eight times, lasting until bar 17. Then the "outer" loop (the one with the later end time) takes over, terminating the "inner" loop. This returns to bar 1, playing the inner loop eight times again. This cycle repeats four times until the outer loop is finished. At that point, the sequence is at bar 65 and it continues playing from there, all previous loops done.

Creating a Loop

Setting a Loop

- Bars 1 to 5 played four times, bars 5 to 7 played eight times.

The second loop is completely ignored since its time is skipped while executing the first loop. When a loop begins at a time that is skipped after executing a previous loop, that loop is ignored (like all other data in the skipped region).

There are two ways to create loops: the Set Loop command, and the Insert button in the title bar of Event Editing windows.

To use the Set Loop Command:

- 1. Activate the Tracks window for the sequence in which you wish to set the loop.**

Double-click the name of the sequence in the Chunks window or, if it is already open, click the window once.

- 2. Select the track(s) or track segments in which you wish to set the loop.**

Highlight the desired track names, or drag over the desired track segments. If several tracks are selected, each will have the same loop set for it. You may not loop the Conductor track.

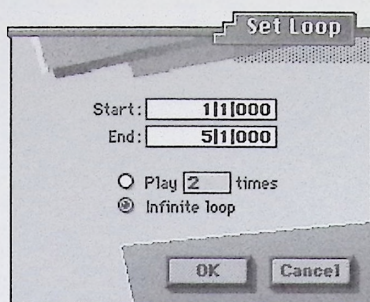
- 3. Optional: Enter the Start and End times of the loop region in the Edit Bar.**

Remember Times, documented in the Event List Window chapter, is useful for entering times in the Edit Bar. The loop boundaries can also be entered in the Set Loop dialog box.

- 4. Choose Set Loop from the Change menu.**

A dialog box appears.

Inserting Loops in the Event Editing Windows



5. Edit the Start and End times if necessary, then enter the number of times you want the loop region to be played.

The number you enter will be the total number of times the region is played. If you want it to play indefinitely, choose the Infinite loop option.

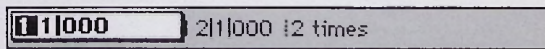
6. Press the OK button to confirm your entry or the Cancel button to cancel it.

Loops can be inserted directly into a track from either the Event List window or the Graphic Editing window.

To insert a loop into a track using the Event List window:

1. Open the Event List containing the passage you'd like to loop.
2. Press the Insert button in the title bar and choose *Loop* from the menu.

A new loop event pops up.



3. Enter the start and end locations and the number of repetitions for the loop.

Use the Tab key to move from field to field. If you type "i" in the repetitions field, Performer will fill in the word "infinite".

4. To enter the loop, press Return. To cancel, click anywhere with the mouse.

If you'd like to insert another loop, press the Enter key. This enters your loop and produces another new loop event.

To insert a loop in a track's Graphic Editing window:

1. Press on the Insert button in the title bar of the Graphic Editing window and choose **Loop** from the menu.

The menu will disappear and the mouse pointer will turn into a cross-hair.

2. Click at the desired start location in the Marker Strip, drag to the right to draw the desired length, and release the mouse at the end location.

A loop will appear. Use the dotted hairlines in the Time Ruler to align the beginning and end of the loop while inserting it.

Information about the loop will appear in the Information bar.

Viewing and Editing Loops in an Event Editing Window

Loops can be viewed and edited in the Event List window for the track that contains them. Viewing loops in event lists is a good way to see them in context. This will help you to see when they occur, what data they cause to be skipped, etc.

The screenshot shows an Event List window with a table of events. The table has columns for time, event type, and data. A nested loop is shown at the top, starting at 211000 and ending at 51000, repeating 12 times. Below it, a loop is shown starting at 211256 and ending at 213240, repeating infinitely. The events within the loop are indented to the right. Events that are skipped due to the loop are shown in italics. A bracket on the right side of the table groups the events within the loop as 'Looped events'. Another bracket on the right side groups the skipped events as 'Skipped loop events'.

Time	Event Type	Data
211000	until 51000	12 times
211256	F3	185 0135
211429	G3	185 0142
212252	A3	185 0172
213280	G3	185 0135
213439	F3	185 0125
214259	G3	198 0149
311300	A3	185 0121
312021	G3	188 01245
312316	F3	185 01226
313052	G3	196 01231
313440	A3	185 0173
314355	F3	1106 0129
314543	F3	189 0168
411504	F3	186 0120
412171	A3	185 0137
412521	F3	191 0123
413026	F3	185 0149
413258	F3	189 0158

Events in a loop are indented to the right in the Event List window. Events in nested loops are indented further to the right. Events that are skipped due to loops are displayed in italics. These display

Editing Loops with the Edit Menu

features will let you see immediately which events are within loops, what level of loop nesting is happening at any given location and what the effect of the loop is, i.e. what data will be skipped.

You can edit loops in the Event List window just like any other parameter. Simply click on the data in the loop you wish to change and enter a new value. To clear a loop or loops from an event list, simply highlight the loop event(s) and select Erase from the Edit menu.

Loops can also be edited in the Graphic Editing window for each track. For more information, see the chapter The Graphic Editing Window.

Loops can be edited like any other event with the commands on the Edit menu. If you Cut, Paste, or otherwise edit a region that contains loops, the loops will be edited along with the other events.

To edit loops using the Tracks window and the Edit menu, first make sure Loops are checked in the Edit Filter. Then select the track(s) to be edited, define the region using the Edit Bar Start and End times, and choose the desired command from the Edit menu. Checking only Loops in the Filter is useful for editing loops without altering the MIDI data in the selected region; this is similar to using the Clear Loops command. Note that by default, loops are unchecked in the Edit Filter.

To remove a loop or loops, select a region that contains the loops and select Erase from the Edit menu, or use the Clear Loops command.

Removing Loops Using the Clear Loops Command

The Clear Loops command in the Changes menu is used with the Tracks window Edit Bar, and is a handy shortcut for removing loops.

To remove a loop or loops, select a region that contains the loops using the Edit Bar Start and End times, and choose the Clear Loops command from the Change menu. Loops that begin inside the specified region are erased; MIDI data is unaffected.

For example, Track-1 contains loops at measures 1 to 4 and measures 3 to 9. If the Edit Bar Start and End times are 2|1|000 and 9|1|000, only the second loop will be cleared.

Loop Recording



"Loop recording" is the process of overdub recording into a region over and over again to build up a pattern. This is best done with the Memory-cycle feature in Performer. See "The Memory-cycle button" on page 71 for detailed information. Once you have built a pattern using Memory-cycle, you can insert a permanent loop over the region. See "Quickly selecting what you have recorded" on page 78.

By using Memory-cycle with overdub recording, Performer can function in a manner very similar to the way most commercial drum machine sequencers work: by building up patterns in multiple passes through a section.

Chapter 14 *The Chunks Window*

The Chunks window displays the Chunks in a Performer file. A Chunk is either a sequence (a collection of tracks) or a song (a collection of sequences and other songs). A Performer file can contain as many Chunks as memory in your Macintosh will allow. Chunks can be cued for playback, either automatically or manually, in order or at random. You can also build an entire song out of other sequences and songs by chaining and stacking Chunks in the Song window, which provides seamless, simultaneous playback of Chunks in any order and combination.

Quick Reference

 Sequence  Song



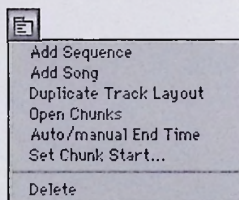
Type: Displays each Chunk's type by icon, either Song or Sequence. This icon is used to drag Chunks into Song windows and to change the order of Chunks in the Chunks window.

Play: Shows the play-enable button for each Chunk. When a Chunk's play-enable button is black, the Chunk is play-enabled. Only one Chunk can be play-enabled at a time.

S# (Song Select Number): Displays the song select number that will play-enable the Chunk when received from a MIDI controller. Song select numbers range from 0-127. If a Chunk has no song number assigned, the column displays a single dash (-).

Chunks					
TYPE	PLAY	S#	END TIME	NAME	COMMENTS
		-	124 1 000	Seq-1	
		-	69 1 000	Song-1	
		-	73 1 000	All my life	
		1	343 1 000	First Set	27 minutes
		2	279 1 000	Second Set	36 minutes
		3	167 1 000	Third Set	14 minutes
		-	43 1 000	Sweat & tears	
		-	98 1 000	Long Road	Rerecord piano part

The Chunks Window Mini-menu



If Performer receives a song select number that is assigned to two or more Chunks, Performer will cue the Chunk that appears highest in the list. For this reason, it is best to assign a unique Song Select number to each Chunk.

End time: Displays each Chunk's End time. In automatic mode, End time is the downbeat of the measure following the last complete measure in the Chunk. When a Chunk's End time is in manual mode, it is bold and can be pop-edited to any length.

Name: Displays the name of the Chunk. Click the name to select the Chunk. Option-click the name to change it. Double-click the name to open the Tracks or Song window belonging to the Chunk.

Because Chunks can be imported into other files, dragged without limit into Song windows, and duplicated very easily, always use the most descriptive Chunk name possible to avoid confusion.

Comments: Displays as much as possible of your comments for each Chunk. View and edit the comments by clicking them.

The Chunks window mini-menu contains the following commands:

Add Sequence: Adds a sequence to the Chunk list. To add several sequences at once, press the Option key while choosing Add.

Add Song: Adds a song to the Chunk list. To add several songs at once, press the Option key while choosing Add.

Duplicate Track Layout: Creates a new, empty sequence with the same track layout as the selected sequence. Select an existing sequence before choosing this command.

Open Chunks: Opens a Song window for each highlighted song and a Tracks window for each highlighted sequence.

Auto/manual end time: Toggles the Auto/manual status of the selected Chunks. Automatic mode locks the Chunk's End time at the downbeat of the measure following the last complete measure in the Chunk. Manual mode changes the time to boldface and allows it to be pop-edited.

Set Chunk Start: Establishes the start times of the currently selected Chunk(s) in each of Performer's three time formats: measures, real time, and SMPTE time. The start times are what you see in the Counter window when you rewind back to the beginning of the Chunk. This is the same window that appears when you click the Start Time button in the main counter.

Delete: Deletes the selected Chunks. If you attempt to delete a Chunk that is part of a song in the open file, a dialog box appears, prompting you to confirm your decision.

Basics

The Chunks window lists the Chunks in a file and provides useful features to manage them, such as adding, deleting, and other operations. In addition, Chunks can be dragged from the Chunks window into a Song window to build a song. For more information, see the chapter *The Song Window*. Chunks can also be automatically cued to playback in the order in which they are listed in the Chunks window. For more information about cueing, see "The Chunk Control buttons" on page 78. Chunks can also be cued remotely from your MIDI controller. For more information, refer to *The Remote Controls Window* chapter.

Opening the Chunks Window

To open the Chunks window, choose Chunks from the Windows menu. The Chunks window will appear, displaying a list of all sequences and songs in the open file. Within the Chunks window, songs and sequences have different icons but behave identically.

Sequences



A sequence is a complete MIDI performance consisting of any number of tracks, which are listed in that sequence's Tracks window. Each track contains MIDI data which may be assigned to any combination of channels. A sequence also has a Conductor track, which contains meter, key, and tempo information.

Many essential operations on tracks are done in the Tracks window: tracks are added and deleted, editing regions within tracks are specified, Event Editing windows for tracks are opened and much more. See *The Tracks Window* chapter for complete details about its operation.

Each sequence also has its own Markers window. See *The Markers Window* section for details about it.

Songs



Selecting Chunks

A song is a collection of Chunks that you organize to play back in the preferred order and combination. Each song has its own Conductor track, End time, and markers. Each song has its own Song window, where you arrange the Chunks that comprise the song. The Song window is described later in this manual.

There are several methods of selecting Chunks:

To select a single Chunk, click on its name. The name will highlight.

To select several adjacent Chunks, click a Chunk name and drag over the desired names. All Chunks dragged over will highlight.

To select several non-adjacent Chunks, hold down the Shift key and click on the names of the Chunks you wish to select. They will highlight.

To deselect Chunks when more than one are highlighted, hold down the Shift key and click on the Chunks you wish to deselect. They will unhighlight.

Creating New Chunks

To create a new, empty sequence, choose *Add Sequence* from the Chunks window mini-menu. To add several new sequences at once, hold down the Option key while choosing *Add Sequence*. You will be prompted for the number of sequences to add.

To create a new sequence with the same track layout as an existing sequence, highlight the existing sequence and select *Duplicate Track Layout* from the Chunks window mini-menu. A new sequence will be added with the same name as the sequence you highlighted preceded by the words *Copy of*. It will have the same track layout as the highlighted sequence: the number of tracks, the track names, and the track playback channel assignments will be identical to the original.

To create a new, empty song, choose *Add Song* from the Chunks window mini-menu. To add several new songs at once, hold down the Option key while choosing *Add Song*. You will be prompted for the number of songs to add.

Duplicating Existing Sequences

Sometimes you may want to duplicate a sequence to experiment with changes or for some other reason. Be sure that the Memory window shows plenty of free memory before you duplicate. To duplicate a sequence:

1. **Highlight the sequence's name in the Chunks window.**
2. **Choose Copy from the Edit menu.**
3. **Choose Paste from the Edit menu.**

An exact copy of the sequence, including all the data in the tracks, will be placed at the end of the list in the Chunks window. Rename it immediately so that you do not get the copy and the original mixed up.

Loading and Linking Chunks from Another File

Performer's Load command allows you to quickly import Chunks into an open file from another, unopened Performer file.

It's easy to run low on memory when working with several sequences and songs. So that you aren't restricted by memory when loading Chunks, Performer lets you load either a Chunk's actual data, or just a Link to that data. The *Data* and *Link* sub-options determine which will be loaded. Loading a link to a Chunk instead of the Chunk itself saves a great deal of memory, allowing even a two Megabyte Macintosh to support a long list of Chunks.

For step-by-step instructions to load and link Chunks, please refer to the chapter *Working With Files*.

Splitting Up an Existing Sequence into Separate Chunks

The Create Chunk mini-menu command in the Tracks Overview window takes selected segments in the Tracks Overview window and turns them into their own sequence Chunk in the Chunks List window.

The Create Chunk command makes it easy to break up a sequence into separate pieces (Chunks) in order to rearrange them more freely in a Song window. For example, let's say that you have built several phrases that are a few bars long in a Sequence. But now you want to rearrange them and try different combinations. To do so, you can select the segments of a phrase and choose Create Chunk from the

mini-menu for each one. Then, you can drag the resulting sequence Chunks from the Chunks list window into an empty Song window to try different orders and combinations.

Once you have arranged the Song as you like, you can even convert it back into a sequence using the Song window mini-menu command called Merge Chunks to Sequence. This command takes the separate Chunks inside the Song window and reduces them to a single sequence Chunk.

At any time, you can take your music freely back and forth from Sequence form to Song form with these two commands to help you create your music.

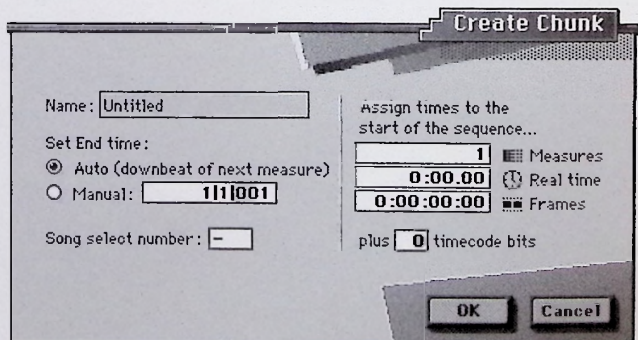
To create a sequence Chunk from the Tracks Overview window:

1. Select the Segments that you wish to be in the Chunk.

Alternately, you can select the region from the Tracks List by highlighting track names and setting a region in the Edit bar. See the section earlier for information about selecting segments. You can even select non-adjacent segments.

2. Choose Create Chunk from the Tracks Overview window mini-menu.

A dialog box appears.



3. Type in a name for the Chunk.

Deleting Chunks

Choosing the Current Playback Chunk

4. Type in an End Time to determine the length of the Chunk.

By default, the end time is determined by the length of the selected region.

5. (Optional) Type in any other information you wish about the Chunk.

6. Press OK to confirm your choice or Cancel to withdraw the command.

To delete a Chunk, click its name to highlight it and choose *Delete* from the Chunks window mini-menu. To delete several Chunks at once, highlight the name of each one as described in the *Selecting Chunks* section above. You can Undo this command.

At any given time, one Chunk is designated as the current playback Chunk. This Chunk is the only one you can play and record into. Certain functions, such as recording, are available only to the currently play-enabled Chunk. For example, if a sequence is play-enabled, its Tracks window has record-enable buttons by its tracks. If a song is play-enabled, one of its component sequences can be record-enabled. Only that sequence's Tracks window will have record-enable buttons.

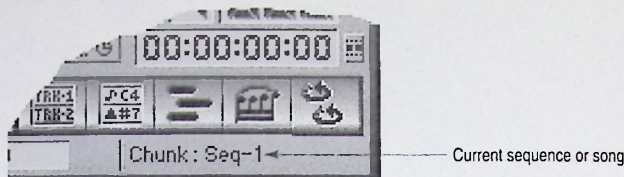
You may edit any Chunk in the file at any time regardless of whether it is play-enabled or not.

To play-enable a Chunk:

- Click the play-enable button to the left of the Chunk name. It will turn solid black. The play-enable buttons of the other Chunks will be hollow.

OR

- Click the Skip buttons as needed until the chunk's name is displayed in the Info bar in the Consolidated Controls panel



Performer also provides two different methods of play-enabling Chunks from a remote device.

The first method is with the Chunk select remote controls found in the Remote Controls window, where each Chunk is assigned a Macintosh key and MIDI event. You play-enable a Chunk by pressing its corresponding Macintosh key or sending its corresponding MIDI event from your MIDI keyboard (or controller). Please refer to the chapter *The Remote Controls Window* for more information.

The second method is Chunk Select, which allows you to cue Chunks for playback by sending a MIDI Song Select message from a MIDI controller. The Chunks window column *S#* displays the Song Select number that, when received, will cue the corresponding Chunk for playback. If a Chunk has no Song number assigned, the *S#* column displays a single dash (-).

Most hardware sequencers and some MIDI keyboard controllers can send and receive Song Select messages. Simply send a Song Select message as instructed in that module's documentation. If the open file contains a Chunk assigned to the Song number in the message, that Chunk will be play-enabled. If more than one Chunk has the same Song number assigned, the one highest in the Chunks list will be cued.

When used in combination with the Chunk Chaining buttons in the Consolidated Controls panel, a Song Select message cues the corresponding Chunk to be play-enabled or played back.

Opening Chunks

Each sequence Chunk has its own Tracks window, and each song Chunk has its own Song window. To see a Chunk's Tracks or Song window, click the Chunk's name to highlight it and choose *Open Chunks* from the Chunk window mini-menu. Or just double-click the Chunk name.

Rearranging the Order of Chunks

You may rearrange the Chunks in whatever order is most meaningful to you. To change the position of a Chunk in the Chunks list:

- 1. Press the type icon of the Chunk you want to move.**

A grey outline appears delineating the Chunk.

- 2. Drag the mouse to the position where you want the Chunk.**

You can use the grey outline to determine the position of the Chunk.

- 3. Release the mouse button.**

The Chunk will appear in its new position.

Rearranging the order of the Chunks is a useful organizational tool. In addition, it lets you determine the Chunks' default cueing order when using the Skip, Cue Chunks, and Chain Chunks buttons described later in this chapter.

Changing the Name of a Chunk

To change the name of a Chunk:

- 4. Option-click the name of the Chunk.**

A small box will pop up.

- 5. Type the Chunk name in the box.**

- 6. Press the Return key to confirm the name or Command-period to cancel it.**

You can use the Enter or down arrow key to approve the change and edit the next Chunk name in the list. You can also use the up arrow key to approve the change and edit the previous Chunk name in the list.

Entering Comments

To enter or modify comments for a Chunk:

- 1. Click in the comments field to the right of the Chunk name.**

A box appears. If you've already entered a comment for the Chunk, the entire comment appears highlighted in the box.

- 2. Enter or edit the comment.**

Auto Versus Manual End Time

3. Click OK to confirm the changes you've made and close the comments box, or click Cancel to discard the changes.

Press the down arrow key or the Enter key to approve the changes you've made and move to the comment for the next Chunk. The up arrow key likewise moves to the comment for the previous Chunk.

When entering or editing a comment, the Return key starts a new line of text instead of approving the changes as usual in Performer's user interface.

The Chunks window field *End Time* displays either the automatic, Performer-generated ending time of the Chunk, or a time that you have entered manually. It's important to understand how this time affects your music.

Performer offers two ways of playing Chunks sequentially: by arranging Chunks vertically and horizontally in the Song window, and by Chunk Chaining using the Cue Chunks, Chain Chunks, and Skip buttons in the Consolidated Controls panel. The End time shown for each Chunk in the Chunks window affects these two types of chaining differently.

When a Chunk is in a Song window, the Chunks window End time does not affect the playback length of the Chunk. Within a song, a Chunk will play every note it contains, regardless of its Chunks window End time. What it *does* affect is column placement. Columns appear automatically at the End time of each Chunk dragged into the Song window. This makes it easy to place Chunks end to end.

For example, a Chunk whose last attack is at 4|4|322 will have an automatic End time of 5|1|000. When this Chunk is dragged into a Song window at time 1|1|000, a column will appear at 5|1|000, making it very easy for you to place the next Chunk in a metrically logical location. If you prefer a 5-bar phrase, just change the End time to 6|1|000. The end column will appear at 6|1|000, even though the Chunk only plays through four measures.

Again, remember that the Chunk End time does not affect playback in the Song window, only the column placement.

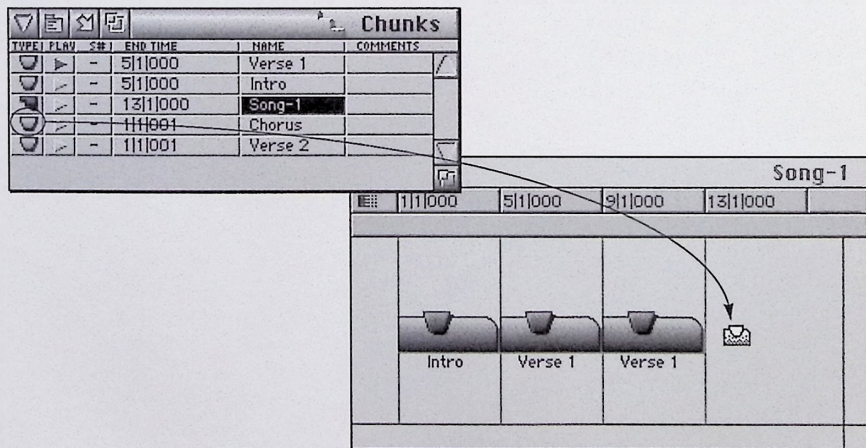
Building a Song with Chunks

When using the Chunk controls in the Consolidated Controls panel, you'll find that each Chunk's End time does affect its playback length. For example, clicking Play with the Chain Chunks button enabled causes playback of one Chunk after another, each Chunk playing until the Counter reaches that Chunk's End time. Phrases, even notes that normally would last through the End time will be cut off. You can avoid this by setting a Chunk's End time to be later, thereby building sustain into the Chunk's play length.

In summary: regardless of auto/manual status, in the Song window the End time determines the Chunk's ending column location but not its playback length. During Chunk Chaining, playback actually stops at the End time.

For more information about the Song window and Chunk cueing, please refer to the chapter, *The Song Window* and "The Chunk Control buttons" on page 78, respectively.

To build a Song out of Chunks in the Chunks window, drag their type icon into a Song Window. For complete information, please refer to the next chapter, *The Song Window*.



Copying tracks From One Sequence Chunk to Another

Use the following procedure to copy between sequences that have the same track layout (i.e. the same number of tracks, preferably with the same MIDI channel assignments). *If the sequences have different track layouts, this procedure will not work correctly.* See the chapter *The Tracks Window* for more information.

To copy from sequence A and paste into sequence B:

1. Activate the Tracks window of sequence A.

Click anywhere in it to activate it.

2. Set the start and end times in the Edit bar to define the region you wish to copy.

To select the entire sequence, simply double-click the word *Edit* in the Edit bar.

3. Highlight all the track names in Sequence A.

Either click and drag over them, or choose *Select All* from the Edit menu.

4. Select Copy from the Edit menu.

As a short cut, press command-C.

5. Activate the Tracks window of Sequence B.

6. Set the Start Time in the Edit bar to the time at which you want to paste the material into sequence B.

7. Highlight all the track names in Sequence B.

8. Select Paste from the Edit menu.

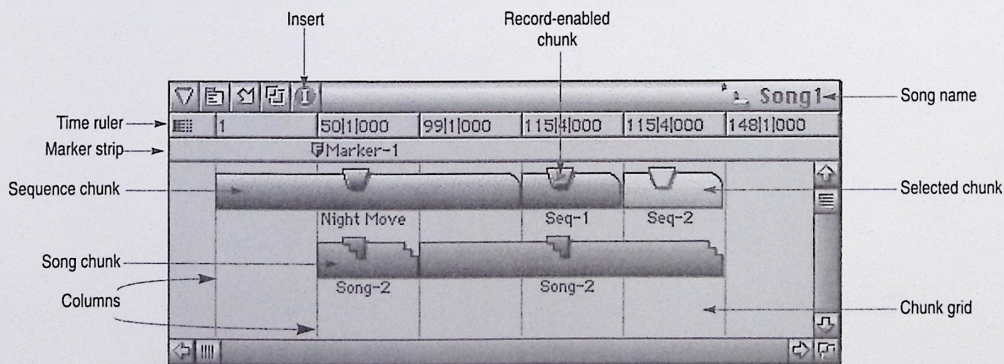
The information from Sequence A is pasted into Sequence B at the Edit Bar Start Time of Sequence B.

Chapter 15 *The Song Window*

In Performer, a **song** is a collection of Chunks. The Chunks that make up a song are displayed in that song's window, plotted on a grid beneath a horizontal, non-linear time ruler. The Song window is the work space in which you arrange the Chunks in time and in relation to other Chunks.

By dragging and using standard Edit commands on the Chunks, you can arrange them to graphically represent the order and combinations in which you want them to play back. What you see is what you will hear: adjacent Chunks will play one after the other, and stacked (vertically aligned) Chunks will play simultaneously. Arranging in the Song window can be done in real time while the song is playing back.

Quick Reference



Chunk Grid: Serves as a workspace in which you arrange Chunks. The grid will not scroll when you drag a Chunk to one of the borders; this allows you to delete a Chunk by dragging it out of the window, or to drag a Chunk to another Song window.

Song Chunks and Sequence Chunks: Represent songs and sequences that have been dragged into the Song window. Click a Chunk once to select it, twice to open its Song or Tracks window. Change a Chunk's name by option-clicking it in the Chunks window. If a Chunk's name is longer than its Chunk icon, the first several letters will be followed by an ellipsis.

A Chunk's size in the Song window is relative to that of the other Chunks in the window, rather than absolute. Chunks shorten and lengthen so that within a region, the longest Chunk always appears longest in the Song window. A Chunk's length can be changed in the Chunks window by setting the Chunk's End time to manual mode and typing in the new value.

The standard Edit commands (Cut, Copy, Paste, Erase, and Undo) and dragging operations can be used on Chunks in the Song window.

Marker Strip: Displays the Markers associated with the open song. Every marker in a song automatically produces a column at the same time location in the Song window.

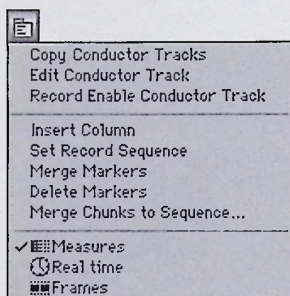
Time Ruler: Indicates the position of each Chunk in any combination of measure | beat | tick, real, and SMPTE time formats. The Ruler is non-linear, meaning the ruler markings denote Chunk Start and End times rather than regular time units. Choose which time formats are displayed using the Song window mini-menu selections *Measures*, *Real time*, and *Frames*.

Insert button: Produces a dialog box prompting for a measure | beat | tick, real, or SMPTE time at which a column should be inserted. Clicking this button is a shortcut for choosing *Insert Column* from the Song window mini-menu.

Song name: Displays the name of the song to which the window belongs. The song name can be changed by option-clicking it in the Chunks window.

Record-enabled Chunk: Displays a record-enable button in its handle, indicating that if the Song is play-enabled and the Record button is pressed, it will begin to record data at its start time. Only sequence Chunks can be record-enabled.

The Song Window Mini-menu



Column: Serves as a placement guide for Chunks. Columns appear automatically at the end of each Chunk, and can be inserted manually by choosing *Insert* from the Song window mini-menu or by clicking the Insert button in the Song window title bar.

Selected Chunk: Appears inverted to indicate that it has been selected. Selected Chunks are subject to Edit commands as well as several Song window mini-menu commands.

The Song window has the following mini-menu items:

Copy Conductor Tracks: Copies the Conductor tracks of the selected Chunks into the song's Conductor track. In time regions where two or more Chunks are selected, the information from the uppermost Chunk is used. Markers are not included in the copy; use the *Merge markers* command to copy Chunk markers into a song.

Edit Conductor Track: Opens a Graphic or Event list editing window of the song's Conductor track.

Record-enable Conductor: Enables the Conductor track of the song for recording Tap Tempo information.

Insert Column: Produces a dialog box prompting for a measure, real, or SMPTE time at which to insert a new column. Clicking the Insert button in the Song window title bar is a shortcut for choosing this item.

Set Record Sequence: Enables or disables the selected sequence for recording within the song. Only one sequence can be record-enabled at a time. Choosing this item with more than one Chunk selected, or with a Song selected, produces a warning message.

Merge Markers: Merges the markers of all selected Chunks into the song's marker list. Locked markers are not included in the merge.

Delete Markers: Deletes from the song's marker list any markers that are identical to markers in the selected Chunks.

Merge Chunks to Sequence...: Produces the Merge Chunks dialog box, which contains the following options:

Copy all tracks creates a sequence containing all tracks of the selected Chunks, and places this new sequence in the Chunks window.

Merge tracks with identical names creates a sequence containing all tracks in the selected Chunks, merges any tracks with identical names, and places this new sequence in the Chunks window.

Measures/Real time/Frames: Determine which time formats should be displayed in the Song window Time ruler. Choosing a format checks or unchecks it; the checked formats are displayed.

Columns

When you place a Chunk in the Song window, its Start and End times are marked with **columns**. Columns serve as Chunk placement guides. A column following a Chunk does not necessarily mean that the Chunk will stop playing back at that point.

For example, Sequence-1 is four measures long and has an End time of 5|1|000. Dragging it into a Song window produces a column at the End time, and playback stops there as well.

Now let's say that Sequence-1 contains ten bars of music, but the End time has been manually set to 5|1|000. Dragging the sequence into a Song window still produces a 4-bar Chunk and a column at 5|1|000, but the Chunk plays back all the way to measure ten.

Inserting Columns

Before you can place a Chunk at a time location in the Song window, there must be a column at that location. Columns appear automatically at the Song's Start time, at each marker in the Song, and at the end of each Chunk dragged into the Song window. You can also insert columns manually.

To insert a column manually:

1. Click the Insert button in the Song window title bar.

You can also choose *Insert Column* from the Song window mini-menu. A dialog box appears, prompting you for a location in measure|beat|tick, real, or SMPTE time.



Creating a Song

2. Click the radio button next to the time format you wish to use, and enter the time.

3. Click OK to confirm your entry or Cancel to cancel the Insert.

If you click OK, the dialog box disappears and a column appears at the time you specified. If you click Cancel, the dialog box disappears and the Song window is unchanged.

4. Place a Chunk at the new column location.

Performer automatically eliminates columns that do not have an associated Chunk or marker. So, if you don't place a Chunk at the new column you have just inserted, the column will disappear when the grid redraws.

Songs are created by dragging Chunk icons from the Chunks window into a Song window, then arranging the Chunks in any playback order and combination you wish. This can be done before or during playback of the Song. To create a song:

1. Choose Add Song from the Chunks window mini-menu.

A new, empty song is added to the Chunks list.

2. If necessary, add other songs and sequences to the Chunks list.

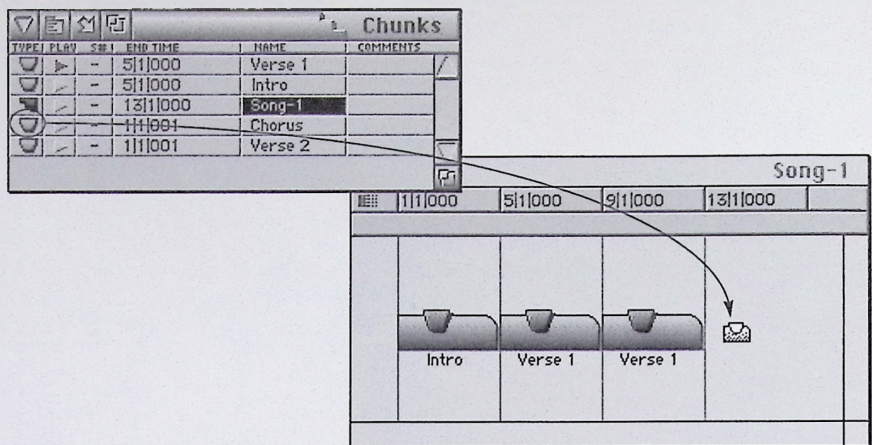
For this example we'll assume you have at least two Chunks in addition to the song just added.

3. Open the Song window by double-clicking the song's name in the Chunks window.

The song's window opens. Alternately, you can open the Song window by clicking its name, then choosing *Open Chunks* from the Chunks window mini-menu.

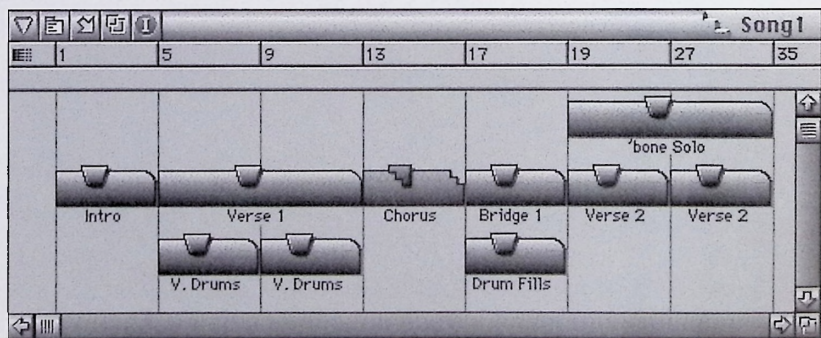
4. Grab a Chunk by clicking the icon to the left of its name in the Chunks window.

Release the Chunk in the Chunk Grid beneath the ruler. The Chunk left-justifies to the column at 1|1|000, and a new column appears to the right of the Chunk. Note that you cannot drag the song into its own Song window.



5. Continue dragging, option-dragging, and editing Chunks in the Song window to arrange them as desired.

Chunks that you place end to end will play sequentially; stacked Chunks will play simultaneously.



When placing Chunks into songs, keep the following in mind. Every Chunk has its own Chunk Start time. Every copy of the Chunk uses this time and will reflect any changes made to the original.

Playing Back a Song

Scrolling During Playback

Editing in the Song Window

Specifically, a Chunk's Event List window times relate to its own start time, say 1111000, even if that Chunk has been dragged into a song to start playing at measure 300.

Similarly, each sequence Chunk has its own Tracks and Event Editing windows, and each song Chunk has its own Song window. Every copy of a Chunk is affected by the edits performed in these windows.

To play a song:

1. **Click the title bar of the Chunks window to activate it.**
2. **Click the play-enable button of the song you wish to play.**
3. **In the Consolidated Controls panel, click Play.**

Adjacent Chunks in the song play sequentially; stacked Chunks play simultaneously.

For another method of playing Chunks one after the other, see "The Chunk Control buttons" on page 78.

The *Auto-Scroll* command in the Basics menu can make the Song window scroll during playback. In addition, the window will automatically open to the current playback location of the sequence. Please refer to the Auto-Scrolling section in the *Playback* chapter for more information.

Once you've placed a few Chunks into a song, the Song window offers powerful editing capabilities to help you arrange your music. These operations can be done before or during playback.

Select the Chunk by clicking it, or by dragging a marquee around it.

Open a Chunk's Song or Tracks window by double-clicking its icon.

The standard Macintosh Edit commands (Cut, Copy, Paste, Erase, and Undo) can all be used on Chunks selected in a Song window, with the following results.

Cut: Removes each selected Chunk from the Chunk Grid and places a copy on the Clipboard.

Copy: Places a copy of each selected Chunk on the Clipboard.

Recording MIDI into a Song

Paste: Makes the cursor change to a mini-likeness of the chunk to be pasted. Click at the desired column location in a Song window to complete the paste operation.

Erase: Removes each selected Chunk from the Chunk Grid; nothing is placed on the Clipboard. You can also delete a Chunk from a Song window by dragging it out of the window.

Undo: Returns the Song window to its state prior to the last Edit or dragging operation. For example, dragging a Chunk to a different column enables the Undo command and updates it to *Undo Drag*. Choosing *Undo Drag* returns the dragged Chunk to its original position.

Dragging the Chunk to a different column changes its playback start time. Dragging a Chunk out of the Song window deletes it from the Song. You can drag a Chunk from one Song window to another.

Option-dragging, consistent with Performer's graphic track editing, leaves a copy of the Chunk at its original location. Option-dragging a Chunk out of the Song window does not affect that Song window; you can option-drag a Chunk into another Song window, resulting in a copy in each window.

Dragging and Option-dragging do not cause the Song window to scroll. This allows you to drag a Chunk out of a Song window, either to delete it or to move it to another song. If you need to place a Chunk at a time location not displayed in the Song window, Cut or Copy the Chunk, use the scroll bars to move to the desired location, insert a column if necessary, and Paste.

Performer lets you record both MIDI and tempo information into a song. MIDI information can be recorded into any sequence Chunk contained in the song, and tempo information can be recorded into the song's Conductor track.

To record MIDI information into a song's component sequence:

1. **In the Chunks window, play-enable the Song into which you wish to record.**

Chunks					
TYPE	FLAVI	S#	END TIME	NAME	COMMENTS
		-	12411000	Seq-1	
		-	69111000	Song-1	
		-	73111000	All my life	
		1	34311000	First Set	27 minutes
		2	127911000	Second Set	27 minutes

2. Double-click the song's name to open its Song window.

If the song's window was already open, the window activates.

3. In the Song window, click the sequence Chunk into which you wish to record.

The Chunk highlights; any Chunks that were selected are deselected.

4. Choose *Set Record Sequence* from the Song window mini-menu.

The highlighted sequence now has a record-enable indicator in its handle. If you change your mind, choose *Set Record Sequence* again to disable the Chunk.



5. Double-click the record-enabled Chunk.

The Tracks window for the Chunk opens. Each track has a record-enable button.

6. Record-enable one of the sequence's tracks by clicking its record-enable button.

If you wish to record on several tracks, use Multi-Record as described in the *Recording* chapter.

7. Locate the point in the song at which you want to begin recording.

Use the motion controls in the transport controls or set the Counter directly.

Recording Tempo Information into a Song

8. Click Record.

The song begins to playback. Performer starts recording at the record-enabled Chunk's starting time or the Auto-Record In time and continues indefinitely or until the Auto-Record Out time.

9. When you are finished, click Stop.

To hear the recorded material, rewind as necessary and click Play.

Performer also lets you record tempo information into a song. Say you've created a song in which you'd like to have several tempo changes, even rubato passages. Tap Tempo is the most musical way to add these changes to your song — you don't need to guess at the beats per minute, or even the measure numbers where the changes should occur.

Each Chunk has its own Conductor track, containing the tempo, key, and meter information for that Chunk. Instead of recording MIDI events, the Conductor track records tempo information while slaved to Tap Tempo. Tap Tempo lets you control the beat by simply playing a MIDI event like a metronome that Performer follows and can record. If recorded, the information becomes a tempo map that can be edited in the Conductor track and that Performer will follow during subsequent playbacks of the sequence.

You can even record tempo information into the song's Conductor track while recording music into one of the song's component sequences.

To record tempo information into a song's Conductor track:

- 1. In the Chunks window, play-enable the Song into which you wish to record.**
- 2. Double-click the song's name to open its Song window.**

If the song's window was already open, the window activates.

- 3. Choose *Record-Enable Conductor* from the Song window mini-menu.**

The song's Conductor track is now record-enabled; this is indicated by a check mark in the mini-menu next to *Record-Enable Conductor*:

4. Choose *Receive Sync* from the Basics menu.

The Receive Sync dialog box appears.

5. Click the radio button next to *Tap Tempo*, then choose the port, MIDI channel, MIDI event, and countoff beats you wish to use.

Choose an event/channel combination that you are not using as a Remote Control. Refer to the *Remote Controls* chapter for information on Remote Controls assignments, and to the *Receive Sync* chapter for specific information on Tap Tempo.

6. Optional: Click the sequence Chunk into which you wish to record.

If you wish to record MIDI data while recording tempo information, you must record-enable the desired sequence within the song, and track(s) within that sequence.

7. Choose *Set Record Sequence* from the Song Window mini-menu.

The highlighted sequence now has a record-enable indicator in its handle. If you change your mind, choose *Set Record Sequence* again to disable the Chunk.



8. Double-click the record-enabled Chunk.

The Tracks window for the Chunk opens. Each track has a record-enable button.

9. Record-enable one of the sequence's tracks by clicking its record-enable button.

If you wish to record on several tracks, use Multi-Record as described in the *Recording* chapter.

10. Choose *Slave to External Sync* from the Basics menu.

Chunking Hints

Creating an Echo Effect

- 11. Click Record and begin tapping the specified tap event at the desired tempo.**

The Play button remains grey until you have tapped the specified number of countoff beats. Performer starts recording at the record-enabled Chunk's starting time and continues indefinitely or until the Auto-Record Out time, whichever is sooner.

- 12. When you are finished, click Stop.**

To hear the recorded material, rewind as necessary and click Play.

The Song window can be used to quickly create special effects. Try some of the suggestions here to get started.

To add an echo effect to part of a song, try the following.

- 1. Find the Chunk(s) that you wish to echo.**

Note the starting time of each according to the Song window Time Ruler.

- 2. Click the Insert button in the Song window title bar.**

The Insert Column dialog box appears, prompting you for the measure, real, or frame time at which a column should be inserted.

- 3. Enter a measure time about 50 ticks after the original Chunk's starting time within the Song.**

To create an echo that plays in rhythm with the original Chunk, use divisions of the beat (for example, a quarter note=480 ticks so try 60, 120, or 240). A column will appear in the Song window at the time you specify.

- 4. While holding down the Option key on your Macintosh keyboard, drag the Chunk to the new column.**

A copy of the Chunk remains at the original location.

- 5. Play back the song to hear the result.**

Experiment with different amounts of delay to achieve the best effect.

Exporting a song to other music software programs

Managing Markers in a Song

Song Chunks cannot be directly converted to other file formats, but you can use the *Merge Chunks to sequence* command in the Song window mini-menu to convert the song into a sequence. The resulting sequence can be converted to any alternative file format available in the Save As command dialog box. See "Saving a sequence in another format" on page 51.

Every Chunk has its own Markers list. (See "The Markers Window" on page 245 for an introduction to markers.) Markers serve many functions, from simple references to auto-locators. You'll often find when you place a Chunk into a song that it would be useful to see the Chunk's markers in the context of the whole song. The *Merge Markers* command in the Song window mini-menu lets you do just that. Simply select all the component Chunks whose markers you'd like to copy into the song, and choose *Merge Markers*. All unlocked markers in the selected Chunks now exist in the Song, and are displayed in the Song's marker strip and Markers window.

You can just as easily delete a Chunk's markers from a song. Select the Chunks whose markers should be removed from the song and choose *Delete Markers*. Performer compares the song's markers to those of the selected Chunks, and removes any that match up. The marker list of the Chunk is not affected. Keep in mind that once you merge markers of a Chunk into a song, dragging the Chunk to a different location will not move the markers. Further, selecting the relocated Chunk and choosing *Delete Markers* will not have any effect, as the markers are no longer associated with the Chunk.

Markers can be of great help when building a song or score because Performer automatically generates a column in the Song window for each marker. You can use the Song's Markers window to create a list of section markers, which will become Chunk placement columns in the Song window. Marker-generated columns are particularly useful for placing Chunks at hit points, which can be created during playback using the *Record Hits* command found in the Markers window mini-menu for each Chunk.

Chunking and Synchronization

Chunking (arranging Chunks in the Song window) is the ideal method of playing multiple Chunks while slaved to external sync. Firstly, Chunking allows seamless transitions between Chunks within a song. What's more, these Chunks can be edited independently even after they have been dragged into a song.

Matching chunk start times with their location in a song

Secondly, rather than having a different Start time and tempo map for each Chunk within a song, the song itself has one Start time and one Conductor track to govern all component Chunks. In fact, when placing Chunks into a song you could use *Set Chunk Start*, found in the Chunks window mini-menu, to change each Chunk's start time to correspond with its playback location in the song. The Chunk's SMPTE start times will shift accordingly, matching those in the Song window Time Ruler. If a Chunk contains tempo changes, you can use the *Copy Conductor tracks* mini-menu command to make every SMPTE time of a component Chunk match those of the song that contains it.

Finally, film scoring applications benefit greatly from the Song window. Using the Record Hits feature in the Markers window, you can create a series of SMPTE hit points associated with a song. Each hit point becomes a marker. Because Performer inserts a column in the Song window for each Marker, you automatically have a Chunk placement guide at each hit point in the song.

When Chunks are placed in a song, the song itself has one Start time and one Conductor track to govern all component Chunks. When placing Chunks into a song, you may want to change each component Chunk's start time to match its playback location in the song. Then, the SMPTE start time of the component Chunk will be the same as its SMPTE location with respect to the song.

To match a component Chunk's SMPTE start time with the song that contains it, look at the column where the Chunk starts in the Song window and make a note of the SMPTE time of the column. Then, set the Chunk's start time to be the same SMPTE time location. For information about how to set the start time, see "Setting the start time" on page 90.

If the component Chunk contains tempo changes, you can use the *Copy Conductor tracks* mini-menu command to copy all of its tempo changes into the song's Conductor track, making *every SMPTE hit point* of a component Chunk match its SMPTE time in the song that contains it.

Auto Versus Manual End Time

The Chunks window field *End time* displays either the automatic, Performer-generated ending time of the Chunk, or a time that you have entered manually. It's important to understand how this time affects your music.

Performer offers two ways of playing Chunks sequentially: by arranging Chunks vertically and horizontally in the Song window, and by Chunk Chaining using the Cue Chunks, Chain Chunks, and Skip buttons in the Consolidated Controls panel. The End time shown for each Chunk in the Chunks window affects these two types of chaining differently.

When a Chunk is in a Song window, the Chunks window End time does not affect the playback length of the Chunk. Within a song, a Chunk will play every note it contains, regardless of its Chunks window End time. What it *does* affect is column placement. Columns appear automatically at the End time of each Chunk dragged into the Song window. This makes it easy to place Chunks end to end.

For example, a Chunk whose last attack is at 4|4|322 will have an automatic End time of 5|1|000. When this Chunk is dragged into a Song window at time 1|1|000, a column will appear at 5|1|000, making it very easy for you to place the next Chunk in a metrically logical location. If you prefer a 5-bar phrase, just change the End time to 6|1|000. The end column will appear at 6|1|000, even though the Chunk only plays through four measures.

Again, remember that the Chunk End time does not affect playback in the Song window, only the column placement.

When using the Chunk controls in the Consolidated Controls panel, you'll find that each Chunk's End time does affect its playback length. For example, clicking Play with the Chain Chunks button enabled causes playback of one Chunk after another, each Chunk playing until the Counter reaches that Chunk's End time. Phrases, even notes that normally would last through the End time will be cut off. You can avoid this by setting a Chunk's End time to be later, thereby building sustain into the Chunk's play length.

In summary: regardless of auto/manual status, in the Song window the End time determines the Chunk's ending column location but not its playback length. During Chunk Chaining, playback actually stops at the End time.

Chapter 16 *Click and Flash*

The Click

Enabling the Click

The Click is the audible indication of the Metronome beat; the Flash is the visible indication. The Click is produced on the Macintosh's internal speaker or through MIDI on a drum machine or other sound module; the Flash appears in a small box on the screen. Both are accessible via commands on the Basics menu. The Click & Countoff Options feature in the Basics Menu allows you to control the click's source and volume. In addition, it provides options for when the click occurs e.g. only while recording or only during the countoff.

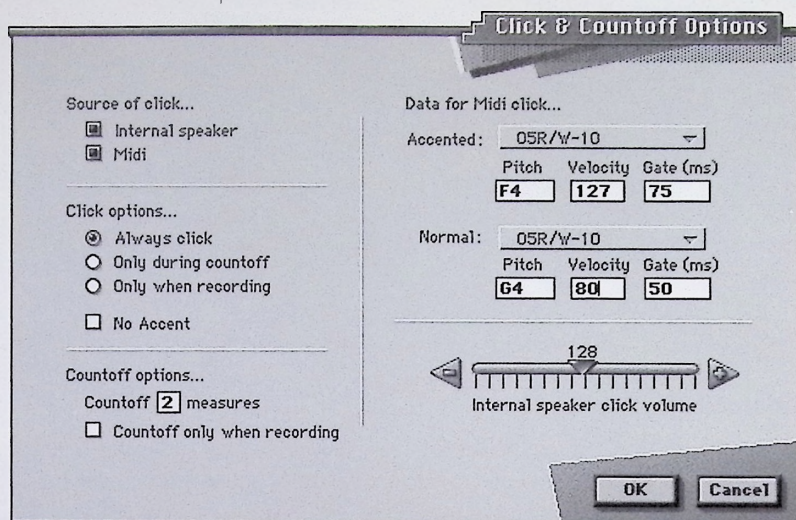
The Click "clicks" on the beat. The beat is determined by each meter change in the Conductor track. If the Click is on, Performer will click at the beginning of every measure. The first beat of every measure is slightly accented. The subsequent clicks in the measure depend on how the metronome click value is set in the current meter. To learn more about setting meters, see chapter 33, "Change Meter".

To turn on the Click, choose *Click* from the Basics menu or press command-5. To turn off the Click, choose it again. When the Click is on, the *Click* menu item will be checked.

To adjust the Click volume *independently* of the Macintosh beep sound, use the Click & Countoff Options dialog box described in the next section. You can also amplify the Click by routing the audio output from the speaker jack on the rear of your Macintosh to your sound system. See the following two sections for more information.

Click & Countoff Options

The Click & Countoff Options dialog box, chosen from the Basics menu, provides several options for controlling the click.



You can also open this dialog by double-clicking the Count-off button.

Source of Click

Source of click specifies how the click is generated. Select one or both options.

The **Internal speaker** option produces a click sound from the computer's internal speaker.

☞ (Note: the internal speaker click does not work on some Macintosh models with certain system configurations.)

The **MIDI** option will send a MIDI note for every click. For this option, you must set up an instrument to receive these notes and play a 'click' sound of your choosing. For example, a drum machine could play rim shots, or a synthesizer could play short beeps.

Click options

Always click makes the click audible whenever Performer is counting off, playing or recording.

Only during countoff makes the click audible only during countoff measures. When playback or recording begins, the click will fall silent. See “*The Countoff button*” on page 74 for more information about the countoff.

Only when recording makes the click audible only when Performer is in record mode. If the Countoff button is enabled, Performer will also click during the countoff in this mode.

No accent removes the accent from the first click in each measure. This option affects both the internal speaker click and the MIDI click.

Countoff options

Countoff n measures lets you type in the number of measures you want for the countoff. The countoff will be in the same meter as the current playback location in the main counter.

Countoff only when recording causes the countoff to occur only before recording, not before playback or any other function.

Data for MIDI Click

These options define what notes are played if the **MIDI** option is selected. The **Accented** note is played on the first beat of each measure; the **Normal** note is played at all other times. Each note has four parameters:

First, you specify the device that will play the accented and unaccented click by choosing it from the pop-up menu provided. The list of devices in the menu is provided by FreeMIDI.

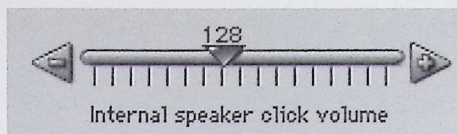
Pitch is the pitch of the note, expressed as a scale letter (A-G) (use the number sign # to represent a sharp, or a small letter ‘b’ to represent a flat) and an octave number. For example, C3 means middle C.

Velocity is the attack (on) velocity, expressed as a number from 0-127.

Gate specifies the length of the note in milliseconds (thousandths of a second).

Internal Speaker Click Volume

The *Internal speaker click volume* slider controls the volume of the Macintosh speaker click. To increase the click volume, drag the slider to the right; to reduce volume, drag to the left. Or, press the + or - buttons at each end of the slider.



Performer's click volume is not affected by the volume slider in the Control Panel. This allows you to attenuate (or turn off) the warning 'beep' sound and turn up the click. See the section later in this chapter called *Routing the Internal Speaker Click to Your Sound System* for information about how to set the system beep and speaker click to different volumes.

- ☛ On some models of the Macintosh, this slider has no effect.

Setting Click & Countoff Options

To set the Click & Countoff Options dialog box:

1. **Select Click & Countoff Options... from the Basics menu.**
2. **Select *Internal speaker* and/or *MIDI* mode.**

Click in the corresponding check box to select a mode. Both modes can be selected simultaneously. If both modes are turned off, no click will be generated, even if Click is selected from the Basics menu.

3. **Select a preference for when the click occurs.**

Refer to the beginning of the *Click & Countoff Options* section for an explanation of each option.

4. **Adjust the Internal speaker click volume, if necessary.**

Drag the slider to the right to increase the click volume; drag it to the left to decrease volume. This slider controls the click volume and is independent of the speaker volume setting in the Control Panel.

Routing the Internal Speaker Click to Your Sound System

5. Set the MIDI click parameters, if necessary.

To change a parameter, click in its box, then type in the new values. You can also set the value over MIDI from your controller keyboard.

6. Click on the OK button to confirm your settings, or on the Cancel button to cancel the changes.

You can amplify the Internal speaker click by routing the audio output from the speaker jack on the rear of your Macintosh to your sound system. When this is done, the Macintosh warning beep sound, which is much louder than the click, will also become amplified. To avoid an over-amplified beep, you can turn down (or turn off) the beep sound using the Macintosh speaker volume slider in the Control Panel in the Apple menu.

To turn down the system beep sound:

1. If you are currently running Performer, save your work and choose Quit from the File menu.

The Macintosh will return to the Finder.

2. Choose Control Panels from the Apple menu.

Important: this must be done *before* you start up Performer. The Control Panel volume cannot be adjusted when Performer is running.

3. Open the Sound control panel.

4. Drag the Speaker volume slider down as low as you wish.

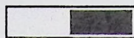
If you drag the volume to zero, the system beep will be turned off, and the menu bar will flash in its place.

5. Close the Control Panel by clicking in the close box in the upper left corner.

After the above procedure, re-start Performer and turn up the speaker click volume slider in the Click & Countoff Options dialog box.

The Flash

The Flash is the visual counterpart to the Click: it “flashes” on the beat. This is a silent way of giving you the current tempo.



To turn on the Flash, choose Flash from the Basics menu or press command 6. The Flash window will appear.

The Flash gives you the tempo by alternating the highlighting (the black rectangle) from side to side. When the Flash is on, the command will be checked on the Basics menu.

- ☛ The Flash only works when the computer screen is set to black and white.
- ☛ The Flash feature may not work on some models of the Macintosh. If this is true for the Macintosh you are currently running Performer on, the Flash menu item will be grayed out.

Placing the Flash on Top of Windows

The Flash window is different than other windows in Performer: when enabled, it will always appear on top of all other windows. This is necessary to keep the Flash window timing completely accurate.

To move the Flash window, press the mouse anywhere in the window and drag the window to a new location. Performer will remember where you place it when you save the file.

Sometimes when the Flash is in front of another window, it will not move when you try to grab it with the mouse. In this situation, click on the push down box of each window *behind* the flash. It will then move freely.

To close the Flash window, choose Flash on the Basics menu again.

Chapter 17 *The Memory Window*

Basics

As you record and edit music in Performer, more and more of the Macintosh's RAM (random access memory) is required to store it. If a great deal of recording or editing is done in a file, or if you are loading sequences from other files, it is possible to run out of memory. It is therefore desirable to monitor how much memory is being used to keep this from occurring.

The Memory window displays the current amount of free memory. It is constantly updated to supply you with a running status of available memory.

The Macintosh's memory usage is dynamic: it changes according to the current task. The memory profile will vary widely with different activities. For instance, if you use a section of the program for the first time, you may find that you suddenly have 30K less of memory. This is the space that the program utilizes for that particular part of the program.

For these reasons, it is a good idea to keep a watchful eye on the Memory window. If you have 150K or less memory free, save often; a long recording or editing pass may use up all your free memory. Also, avoid editing and recording large regions; instead, work with smaller sections. Performer does its best when memory is low but in such circumstances there is a possibility of a system crash and the loss of any work you haven't saved.

Using the Memory Window

To open the Memory window, choose Memory from the Windows menu. The window appears.



To move the window, click in any part of it except the close button and drag it to the desired location. To save space, the Memory window has no title bar.

To close the Memory window, click in the window's close button.

Chapter 18 *The MIDI Monitor Window*

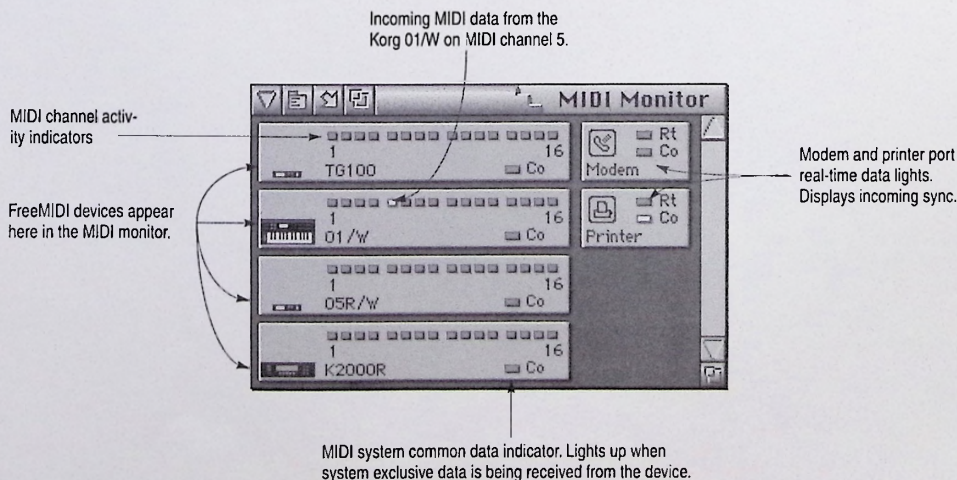
Opening the MIDI Monitor Window

The MIDI Monitor window displays incoming MIDI activity, broken down by input device, MIDI channel, and type of data. This feature is handy when testing hardware, tracing problems in your MIDI system, or monitoring time codes or other special MIDI data. The MIDI Monitor window will function whether active or inactive.

Choose MIDI Monitor from the Windows menu; the window will appear. To move it, click in the title bar and drag to the desired location. To close the MIDI Monitor window, click in the window's close button.

Basics

The MIDI Monitor window consists of one panel for each FreeMIDI system device that has its MIDI OUT connected to the MIDI interface in your current FreeMIDI configuration. It therefore displays any devices that have the ability to send MIDI data to Performer. Each panel contains 16 MIDI channel indicators that are normally unhighlighted; they highlight to indicate incoming MIDI data.



The window includes real-time indicators for the modem port and printer port.

- The Input Filter has no impact on the MIDI Monitor window's display.
- The MIDI Monitor window only displays *incoming* MIDI activity—only data being received by Performer from somewhere else—not *outgoing* data being sent by Performer.

Channel Activity indicators display MIDI activity by MIDI channel. Most normal MIDI data will cause one of these indicators to light up; for example, pressing a key or moving the pitch bend wheel on a controller keyboard will cause the corresponding Channel Activity Indicator to turn black.

The *System Common indicator*, labelled “Co”, indicates incoming system common data, such as system exclusive data, tune request, Song Position Pointer, and Song Select commands.

The *System Real-Time indicator*, labelled “Rt”, includes MIDI beat clocks, DTL (Direct Time Lock), DTL_e (Direct Time Lock enhanced), and System Reset commands. This type of data is used to synchronize devices, and is generated by most sequencers, drum machines, and SMPTE-to-MIDI converters. System real-time data is not assigned to a particular channel and therefore has just one indicator per port.

Active sensing messages, which are sent by some brands of MIDI equipment, are ignored by the MIDI Monitor window. To see if your equipment is “on-line” and working correctly, send note data and observe the Channel Activity indicators, or test it in the FreeMIDI Setup application.

Reordering Devices in the MIDI Monitor

MIDI Monitor window mini-menu

To rearrange the order of the devices in the MIDI Monitor, just drag the panels up or down.

The MIDI Monitor window has the following mini-menu commands:

Show all input devices

This command makes the MIDI Monitor display all devices in your FreeMIDI configuration file that have a MIDI OUT connected to a MIDI IN on the interface.

Show controllers only

This menu command makes the MIDI Monitor display only those devices in your FreeMIDI configuration file that have the *Controller* device property assigned to them.

Clear all devices

Removes all devices from the MIDI Monitor display so you can start from scratch again.

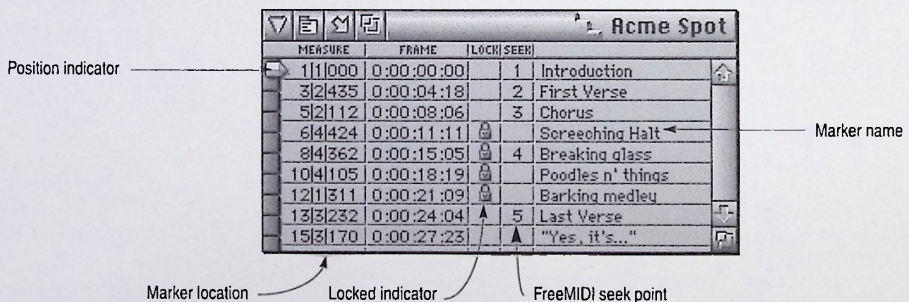
Individual Device names

The mini-menu also displays the name of each device in your studio. Select the name to individually display it. Select it again to hide it.

Chapter 19 *The Markers Window*

The Markers window allows you to display and edit the markers for a Chunk (sequence or song). A marker is a name attached to a particular location in a Chunk. The Markers window can be used as a sophisticated autolocator, allowing you to move to a location instantly. The Markers window provides an easy way to organize your music; markers are visible in the Event Editing windows for each track, and are useful in quickly specifying editing regions. Markers are particularly useful when working with film and video; you can record them in real time to mark hit points, then use the Markers window as an intelligent cue sheet. With the commands in the Change menu you can then adjust meters and tempos to automatically align musical cues to the hit points.

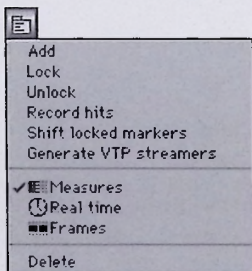
Quick Reference



Time display: Displays the marker locations in your choice of measure, real or frame time. Click on a location to change it. Select the formats you wish to use from the bottom of the mini-menu.

Locked indicator: Indicates that the marker is locked to real/frame time. Toggle from locked to unlocked and back by clicking in the lock column next to the marker name.

Mini-menu



Basics

FreeMIDI Seek point: FreeMIDI provides eight seek points to which it will cue all FreeMIDI applications. You can designate up to eight markers as FreeMIDI seek points. Type in the desired seek point number in this column.

Names: Click on a marker's name to select it. Option-click on the name to change it. Drag over several names to select several markers. Use Shift-click to select or deselect several non-contiguous markers.

Position indicator: Displays the current location in the Chunk. Drag on the indicator to move it. Click anywhere in the grey region to move the indicator to a marker. Moving the indicator changes the current location in the Chunk.

Add: Adds a new marker at the current location. Hold down the Option key while choosing Add to add several markers at once. A dialog box will appear, prompting you for the number of markers to be added.

Delete: Deletes the highlighted markers.

Lock: Locks the highlighted markers to real/frame time. A small lock icon appears by the marker's location to indicate that it is locked.

Unlock: Unlocks the highlighted markers.

Record hits: Enables a special mode such that during playback, every time you hit a key on your controller instrument, a marker will be added at that location.

Shift locked markers: Shifts all highlighted locked markers by a time offset.

Generate VTP Streamers: Causes Performer to trigger a Video Time Piece streamer for each designated marker in the Markers list.

Measures/real time/frames: Choosing these will determine what type of time will be displayed in the marker list. When chosen, the menu entry becomes checked. Choosing it again unchecks it.

The Markers window is used to display and manipulate markers. Each Chunk listed in the Chunks window has its own set of markers. The title bar of the Markers window displays the sequence or song to



Opening a Markers Window

which the markers belong. Each marker consists of a name and a time location it is associated with. Markers are listed in chronological order. You can display the location of a marker in any combination of measure time, real time and frame time.

Normally a marker remains at the same measure time location when you change the tempo of the sequence. In this case, changes in tempo or structure will affect the real and frame time location of the marker. However, when working with film or video, it is useful to assign a marker to a certain event in the action (termed a "hit point"). Such markers are necessarily attached to real or frame time locations. Since the location of the event in the film or video will not change, the location of the marker must not either, even if you change the tempo of the music. Performer lets you 'lock' markers to real/frame time locations. When you change tempos or edit your Chunk, the real/frame time location of locked markers will stay the same and the measure location will change to reflect the new tempo or structure.

Each Chunk has its own set of markers in the Markers window. To open the Markers window for a Chunk:

- 1. Open the Chunks window.**

Do so by choosing *Chunks* from the Windows menu.

- 2. Make sure no Chunks are highlighted.**

To unhighlight them, briefly click a type icon in the left column. If a Chunk is highlighted, a Markers window will be opened for that Chunk.

- 3. Play-enable the Chunk whose Markers window you wish to open.**

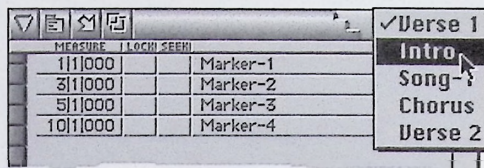
Do so by clicking the play-enable button to the left of the Chunk name.

- 4. Choose *Markers* from the Windows menu.**

The title bar displays the name of the Chunk to which the markers belong.

Switching between sequences and songs

The Markers window shows the markers for an individual sequence or song. If you are working with multiple sequences and songs in a file, you can easily switch between them by command-clicking the name of the sequence in the Marker window title bar as shown below:



Scrolling During Playback

The *Auto-Scroll* command in the Basics menu can make the Markers window scroll during playback. In addition, the window will automatically open to the current playback location of the sequence.

Adding Markers

To add a marker, choose Add from the Markers window mini-menu. The marker's location will be the same as that showing in the Counter. To add several markers at once, hold down the Option key while choosing Add from the mini-menu. A dialog box will appear prompting you for the number of markers to be added.

Changing the Name of a Marker

The size of the name box is limited by the size of the Markers window. If you wish to enter a lot of text for a marker name, resize the window first.

To change the name of a marker:

1. **Option-click on the marker name.**

A small box will pop up.

2. **Type in the name for the marker.**

3. **Press the Return key to approve the change or the Command and period keys to cancel it.**

You can use the Enter or the down arrow key to approve the entry and move to the next marker name, or the up arrow key to approve the entry and move to the previous marker name.

Changing a Marker Time Location

To change the time location of a marker:

1. **Click the time location you wish to change to pop-edit the value.**
2. **Enter the new values.**

Use the Tab key to move between time fields.

3. **Press the Return key to enter the time or the Command and period keys to cancel your change.**

You can use the Enter or down arrow key to approve the change and move to the time location of the next marker; use the up arrow key to approve the change and move to the time location of the previous marker.

If you change the measure time of a marker, even a locked marker, the real and frame times will also change. Changing the real or frame time of a marker will cause the measure time location to change.

Since the markers are listed in chronological order, a marker may seem to vanish when you edit its location. In such cases, the marker has simply been moved out of the visible portion of the marker list.

Setting the Counter to a Marker Location

You can easily set the current location displayed in the Counter window to the location of a marker. This lets you to move to a location by its name instead of time, making it unnecessary for you to keep track of a number of arbitrary measures and times.

To move to the location of a marker:

- ☛ Press on the position indicator and drag it to the marker you want. You can scroll the list up or down by dragging the position indicator slightly past the top or bottom of the marker list.

Or

- ☛ Click in the grey area of the position bar to the left of the desired marker. The indicator will appear at that position. The position indicator will appear under the pointer and you can drag it to the desired marker. This saves you having to scroll around to find the position indicator.

Selecting Markers

To select a marker, highlight it by clicking on its name. There are several methods for selecting several markers at once:

To select several adjacent markers, press on a marker name and drag over the desired names. All markers dragged over will highlight.

To select several non-adjacent markers, hold down the Shift key and click on the names of the markers you wish to select. They will highlight.

To deselect markers when more than one are highlighted, hold down the Shift key and click on the markers you wish to deselect. They will unhighlight.

To extend the currently selected region, shift-drag over the desired end location.

Using Markers to Define an Edit Region

You can use markers to define a region to be edited: instead of typing the Start and End locations in the Edit Bar of the Tracks window, you can use the Markers window and Remember Times command on the Basics menu.

To define a region using the Markers window:

- 1. Select a group of markers such that the beginning and end marker of the group are at the starting and end times of the region to be edited.**

If the marker with the start time you want for the edit region and the marker with the end time for the region are not adjacent, you must select all markers in between. Click on the starting marker and drag down until you reach the ending one.

- 2. Choose Remember Times from the Basics menu.**

Pressing Command-R is the keyboard equivalent for Remember Times. The locations of the starting and ending marker are remembered.

- 3. Activate the Tracks window.**

Click once on it.

Markers in the Event Editing Window

Markers in the Song Window

Merging Markers in the Song Window

Removing Merged Markers from a Song

4. Click once on the word *Edit* in the Edit Bar.

The location of the first highlighted marker will be entered into the Start time and the location of the last highlighted marker will be entered into the End time in the Edit Bar.

You can now use one of the commands from the Edit or Region menus. You can also use this procedure to transfer marker times to the Memory and Auto Record bars in the Consolidated Controls panel.

Markers appear in the Event Editing windows for each track in a sequence. The name and location may not be edited in any of the Event Editing windows. However, commands on the Edit menu may be applied to markers only in the Conductor track Event Editing windows.

You can use the View Filter to determine whether or not markers are displayed in the Event Editing windows.

Markers in a song are displayed in the Markers Strip in the song window. Performer automatically generates a column in the Song window for each marker.

Markers can be of great help when building a song or score because you can use the Song's Markers window to create a list of section markers, which will become Chunk placement columns in the Song window. Marker-generated columns are particularly useful for placing Chunks at hit points, which can be created during playback using the *Record Hits* command.

You'll often find when you place a Chunk into a song that it would be useful to see the Chunk's markers in the context of the whole song. The *Merge Markers* command in the Song window mini-menu lets you do just that. Simply select all the component Chunks whose markers you'd like to copy into the song, and choose *Merge Markers*. All unlocked markers in the selected Chunks now exist in the Song, and are displayed in the Song's marker strip and Markers window.

You can just as easily delete a Chunk's markers from a song. Select the Chunks whose markers should be removed from the song and choose *Delete Markers*. Performer compares the song's markers to those of the selected Chunks, and removes any that match up by both

Editing Markers in the Conductor Track

Locking and Unlocking Markers

Shifting Locked Markers in Time



name and location. The marker list of the Chunk is not affected. Keep in mind that once you merge markers of a Chunk into a song, dragging the Chunk to a different location will not move the markers. Further, selecting the relocated Chunk and choosing *Delete Markers* will not have any effect, as the markers in the song no longer match the markers in the Chunk.

You may apply any of the Edit menu commands (Cut, Copy, Paste, etc.) to markers only in the Conductor track for the Chunk. Select the Conductor track in the Tracks window and set the Start and End times in the Edit bar before invoking one of the Edit commands. Locked markers cannot be edited in the Conductor track. See the *The Conductor Track* and *Edit Commands* chapters for more information.

Markers can be connected to a real or frame time location such that they will retain that location if the tempo is changed: they can be "locked" to the location. If the tempo is changed, the measure time location of the marker will change.

When a marker is unlocked, it sticks to a specific *measure/beat/tick*, and its real time location is flexible. When a marker is locked, it sticks to a specific *real/SMPTE* time, and its measure location is flexible.

To lock a marker, click on it to select it and choose Lock from the Markers window mini-menu. You can lock several markers at once. To unlock a marker, select it and choose Unlock from the Markers window mini-menu. To toggle a single marker between locked and unlocked states, click in the lock column next to the marker's name.

The Shift Locked Markers command on the Markers window mini-menu lets you shift the times of highlighted locked markers by the amount you specify. Unlocked markers which are selected are unaffected by this command.

This feature can be useful if the film or video you are working with has been recut and the locations of the events have moved slightly. It is generally useful when changing the real/frame time locations of markers by a uniform amount.

Recording Hits



To shift the times of locked markers:

- 1. Select the markers you wish to shift.**

Unlocked markers will not be affected by this command. You can include them in your selected markers group without affecting them.

- 2. Choose Shift Locked Markers from the Markers window mini-menu.**

A dialog box will appear.

- 3. Specify whether to advance or delay the markers.**

Advancing markers moves them to earlier times, delaying them moves them to later times. Click on the radio button next to the desired option.

- 4. Choose whether to enter the shift amount in real or frame time.**

Click on the radio button next to the desired option.

- 5. Enter the amount of time by which you wish to shift.**

Click in the text box and type in the number.

- 6. Click on OK to confirm your entry or Cancel to ignore it.**

You can use the Enter or Return key to confirm the entry or the Command and period keys to cancel it.

New markers can be entered in a sequence during playback by striking a key on your MIDI controller instrument. The time location of each marker corresponds with the time in the Counter when the key is struck. This is a very useful feature for recording cue points or hits while viewing film or video.

To create markers during playback:

- 1. Move to the location at which you wish to start playback.**

If slaved to an external master device, this step is not necessary: Performer will locate automatically when you start the master.

2. **Choose Record Hits from the Markers window mini-menu.**

A dialog box will appear.

3. **Specify whether you want the markers to be locked or unlocked.**
4. **Press OK to confirm your choice or Cancel to cancel it.**

Once you press OK, Performer will start playback. If in external sync mode, the Play button will turn grey until the master device is started.

5. **Press a key on your MIDI controller every time you wish to enter a marker.**

A marker will be entered at the current time in the Counter.

6. **To stop entering markers in this way, press the Stop button in the main transport controls.**

Using the Auto Stop feature in the Consolidated Controls panel will also stop this type of marker entry. If you are in external sync, note that stopping the master device does not take Performer out of the Record Hits mode; you must press stop in Performer to end recording hits.

Hints

Composing and Arranging

Below are some helpful hints for using Markers.

Markers provide a useful tool for labeling structural sections of a piece of music. The music can be recorded first and markers added afterwards or markers can be entered first to lay out the structure of the sequence before recording. In the latter case, markers can be used as a kind of musical outline for the structure of the piece.

Markers can be used to quickly rewind to the beginning of a section. They can also be used as structural place holders to mark the ends of unfinished sections.

Since markers can be cut, pasted, merged, etc., in the Conductor Track, they can be moved around with the rest of the data as a sequence grows and changes. You can move them separately from the rest of the data if you wish.

Film and Video Scoring



Streamers and the Video Time Piece™

Use the Edit Filter to specify if markers can be affected by Edit menu commands. In general, it is best to keep the markers box unchecked in the Edit Filter. Check the box only when you know you will be cutting, pasting, etc. markers; uncheck it after you have finished to prevent unwanted changes.

If you are not working with time code, you will probably not need to display real or frame time in the Markers window.

Markers make an excellent cue sheet for planning out or displaying the structure of your score. They can show you the relationship between time locations in the film and measure locations in the music. You can adjust meters and tempos until the metrical beats of the sequence line up satisfactorily with important visual events. This can all be done before recording a note of music.

In addition to using markers to define the structure of your score, you may want to add markers for visual cues and hit points. The Record Hits feature is especially suited for this. These markers should be locked since their time location corresponds to a frame location. Once locked, the measure time location of the marker will be updated if you change the tempo and meter. The frame location will not change.

If the time code on the film or video should change due to restripping after assembly or editing, you can use the Shift Locked Markers command on the Markers window mini-menu to adjust the times of the hit points you've already labeled with markers.

If you have Mark of the Unicorn's Video Time Piece, you will definitely want to read the next section, which explains how markers can be used to trigger streamers.

The Markers window has an additional capability designed for Mark of the Unicorn's video post-production device, the Video Time Piece. The Video Time Piece is a hardware device that can superimpose graphic images on a video picture, including *streamers*. A streamer is a solid white bar that travels across a video screen from left to right to reach the right-hand side of the screen at an exact hit point. Streamers help studio musicians and sound effects engineers to anticipate hit points during video post-production.

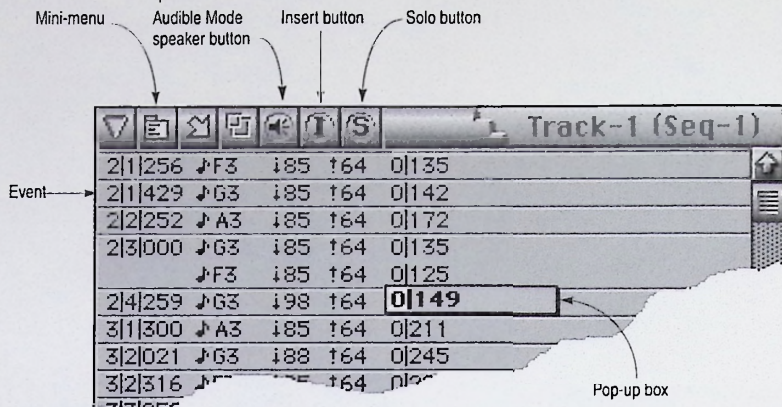
For more information, please refer to the chapter called *Performer and the Video Time Piece*.

Chapter 20 *The Event List Window*

Performer provides four ways to display and edit the data in each track of a sequence: the Event List window, the Graphic Editing window, the Notation Editing window, and the QuickScribe notation window, together referred to as the Event Editing windows. All of these windows can be open at the same time for a track, and any number of tracks can have windows open at any time. This chapter describes the Event List window. See the next two chapters for information on the Graphic Editing and QuickScribe notation windows.

The Event List window displays the MIDI data and other information in a track as a chronological list of “events”. Examples of events are notes, controller data, and program (patch) changes. Other information that occurs in specific time locations can be displayed in an Event List as well: markers, meter changes, key changes, tempo changes, and loop points. The Event List window can be used to edit individual events or select a region of events for editing with menu commands. Event List windows for different tracks can be open at one time. Event List windows can be opened, scrolled, and edited during playback.

Quick Reference



Event: A row of information concerning a single MIDI message or Performer command. Events at different locations are separated by a dotted line. The information displayed for an event depends on its type; see the section *The Event List Display* below for more information.

Mini-menu: Choose items from the mini-menu in the same way as regular menus. The Event List mini-menu contains commands for inserting, controlling the display, and more. See the section called *Mini-menu* for more information.

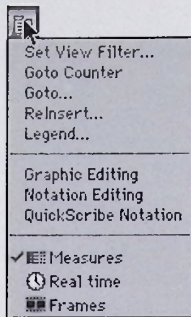
Audible Mode speaker icon: Click on this button to activate Audible Mode. Audible Mode plays back notes one at a time as you click on them in the Event List. An entire phrase can be played back by highlighting a region and option-clicking on the speaker icon.

Insert button: Inserts MIDI events into the Event List. Pressing this button produces a menu of items that can be inserted.

Solo Button: Mutes all other tracks during playback.

Pop-up box: A box that appears when you double-click or option-click on a field of an event. You can enter a new value for the field.

Mini-menu Quick Reference



Opening an Event List Window

Grow box: Drag this box to resize the Event List window.

Set View Filter: Calls up a dialog box from which you select the types of events which are visible in the Event List window. The View Filter applies to all open Event Editing windows.

Goto Counter: Automatically scrolls to the time currently displayed in the Counter.

Goto: Automatically scrolls the Event List display to a time you specify.

ReInsert: Inserts an event of the same type that you last inserted.

Legend: Opens a window that shows what each kind of MIDI event looks like in the Event List.

Graphic Editing: Opens the Graphic Editing window for the track.

Notation Editing: Opens the notation editing window for the track.

QuickScribe Notation: Opens the QuickScribe notation window for the track.

Measures/Real time/Frames: These checkable entries control the types of time displayed in the Event List.

If the Event List is already open for a track, you can simply click on it to activate it. If not, you'll want to open one.

To open an Event List window for a track:

1. **Open or activate the Tracks list window containing the track you wish to edit.**

To open a Tracks window, choose Tracks from the Windows menu. To activate a window already open, click on it.

2. **Double-click on the track name.**

The track's Event List window will appear.

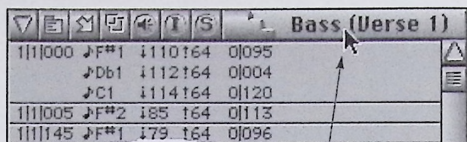
You can also open the Event List window by choosing Event List from the Graphic or Notation Editing window mini-menus.

Switching to a Different Track Using the Title Bar Pop-up Menu

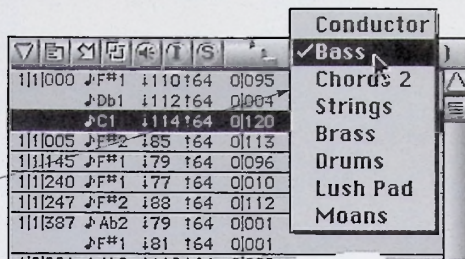
If you have an event list window open for a track, you can switch to a different track in the same window. To do so:

1. **Command-click the track name in the title bar.**

A pop-up menu appears as shown below.



Command-click the track name in the title bar to use the pop-up menu to move from track to track within the same editing window.



2. **Choose the desired track.**

The contents of the window changes to the track you select.

The Event List Display

The Event List window displays MIDI data and other events sequentially. There is one event per line in the display. Events which occur at the same time (such as notes in a chord) will be grouped together between horizontal dotted lines. The starting time is listed only for the first event of these groups. Each note is defined by its attack time, pitch, on velocity, off velocity, and duration.

This example shows nine notes:

Attack time	Pitch	Velocity	Duration	
34 4 468	♭Eb3	158	164	0 095
35 1 000	♭Db4	160	164	0 080
	♭Bb3	165	164	0 103
	♭Bb3	159	164	0 083
	♭F#3	163	164	0 117
35 3 462	♭Eb3	166	164	0 100
35 4 228	♭Ab3	167	164	0 092
35 4 462	♭Eb3	169	164	0 120
36 1 222	♭Eb4	170	164	0 100

Chord

In addition to MIDI note events, there are other types of events that are displayed in the Event List as well. These events include other MIDI commands, like patch changes, and events unique to Performer, like markers and tempo changes.

The next example shows several different types of events. Some are MIDI data, like the patch change event, notes, and pitch bend. Others are Performer-related events, like the marker, key change, and meter change.

Marker	1 1 000	🎵	Prelude
Key change			C Minor
Meter change		6/8	click 🎵
Patch change		60	60 French Horn
Mode change			Omni off
	12 4 000	♭G3	177 190 0 240
	12 5 000	♭G3	177 190 0 240
Notes	12 6 000	♭G3	177 190 0 240
	13 1 000	♭G3	177 190 1 000
	13 5 000	♭Eb3	177 190 1 000
		♭Eb2	177 190 1 000
	14 3 000	♭G3	177 190 1 000
		♭G2	177 190 1 000
Pitch bend	14 3 002	~	0
	15 2 000	♭Ab3	177 190 0 240

Looping points are also displayed on the Event List. Events within loop boundaries are indented. Events that will not be played due to the duration of a previous loop are in italics. See the *Looping* chapter for details.

	1 4 000	↓G3	199	190	0 240
	1 5 000	↓Eb3	199	190	2 000
Loop →	2 1 000	⌚ until 3 1 000	14 times		
	2 4 000	↓F3	199	190	0 240
Notes in the loop →	2 5 000	↓F3	199	190	0 240
	2 6 000	↓F3	199	190	0 240
	3 1 000	↓D3	199	190	4 000
Notes that won't play because of the loop →	5 6 000	↓Eb4	199	190	0 240
	6 1 000	↓Eb4	199	190	0 240
	6 2 000	↓Eb4	199	190	0 240
	6 2 000	↓Eb4	199	190	0 240

Event locations can be displayed in measure|beat|tick, real time, or frame time formats. Any combination of the three types of times can be displayed simultaneously. To display a certain type of time, simply check its menu entry on the Event List window mini-menu. To turn off a format, reselect it from the mini-menu.

2 4 000	0:02:06	0:00:02:16	↓F3	155	190	0 240
2 5 000	0:02:70	0:00:02:21	↓F3	155	190	0 240
2 6 000	0:02:87	0:00:02:26	↓F3	155	190	0 240
12 4 000	0:13:03	0:00:13:01	↓B2	155	190	0 240
			↓G2	155	190	0 240
12 5 000	0:13:19	0:00:13:05	↓D3	155	190	0 240
12 6 000	0:13:38	0:00:13:11	↓G3	155	190	0 240
13 1 000	0:13:57	0:00:13:17	↓G3	155	190	1 000
			↓Eb3	155	190	1 000
13 5 000	0:14:37	0:00:14:11	↓F#3	155	190	1 000
14 3 000	0:15:31	0:00:15:09	↓D3	155	190	1 000
15 2 000	0:17:43	0:00:17:13	↓Ab3	155	190	0 240

Scrolling During Playback

The Auto-Scroll command in the Basics menu can make the Event List window scroll during playback. In addition, the window will automatically open to the current playback location of the sequence. Please refer to the Auto-Scrolling section in the Playback chapter for more information.

Selecting Events in the Event List Window

The following actions select events:

To select a single event, click once on it.

To select several adjacent events, drag over the desired events. All events dragged over will highlight.

To select several non-adjacent events, hold down the Shift key and click on the events you wish to select. They will highlight.

To deselect events, hold down the Shift key and click on the event(s) you wish to deselect. They will unhighlight.

To extend the currently selected region, Command-click or Command-drag at the desired end location.

To edit an event, double-click or Option-click on the field you want to modify. A pop-up box appears in which you can edit the value in the field.

Tab approves the change you made and moves to the next field in the same event.

Return approves and completes the changes you made.

Enter approves the changes you make and moves to the same field in the next event.

the up or down arrow keys approve the changes you make and move to the same field in the next or previous event.

the left or right arrow keys move from field to field in the event box.

The View Filter

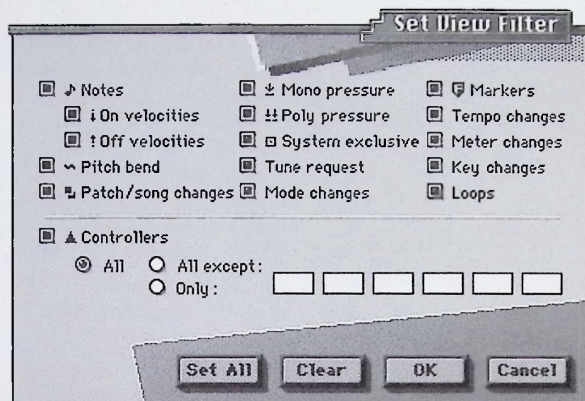
The View Filter allows you to specify what types of MIDI information are displayed in the Event Editing windows. You can open the View Filter dialog box from the mini-menu in any Event Editing window. The View Filter affects all Event Editing windows.

The View Filter also determines which types of events are affected by Edit menu commands when the data is selected in the Event Editing window. Here's a simple rule to remember: if you can see an event in the Event Editing window, it will be affected by edit commands.

To use the View Filter from an Event List window:

1. Choose View Filter from the Event List mini-menu.

A dialog box appears.



2. Choose the types of data to be displayed by checking the check box for each.

You can choose all types of data at once by clicking on the “Set All” button. You can uncheck all the check boxes by clicking on the “Clear” button. Option-click to check only the check box you click on, unchecking all others; command-click to check all boxes except the one you click on. Use the *Controllers* option to specify which controller information is displayed.

3. Press OK to confirm your choice or Cancel to cancel it.

When using the View Filter, keep these rules in mind: *The View Filter settings you select will stay in effect until you change them. They affect all open Event Editing windows. The View Filter settings will affect all edit operations done in the Event Editing windows.*

Specifying Controller Numbers in the View Filter

The buttons under the Controller check box in the View Filter allow you to quickly choose which controller data to be displayed. Click in the Controllers check box, click on the type of option you wish and then enter the controller numbers if necessary.

- *All*: displays *all* controllers.
- *All except*: displays all controllers *except* the numbers you enter.
- *Only*: displays *only* the controller numbers you enter.

To enter controller numbers for the *All except* and *Only* options, click in the text boxes next to the option and type in the numbers. You can use the Tab key to move between boxes in the same option.

Goto Counter

Choosing Goto Counter automatically scrolls the Event List to the location currently displayed in the Counter window. This command is a quick and useful tool for locating specific events in an Event List. For example, if you hear a wrong note in your music during playback, stop playback at that point, and then select Goto Counter in the Event List for the track. This immediately scrolls the Event List to the point where you stopped, allowing you to find and correct the mistake quickly.

To use the Goto Counter command:

1. **Activate the Event List window for the desired track by clicking on it.**
2. **Choose Goto Counter from the Event List window mini-menu.**

The list will automatically scroll to the event closest to the time in the Counter window.

Goto

The Goto command on the Event List window mini-menu scrolls the Event List display to the specified location. It is a quick way to locate a region of events without having to manually scroll through the Event List.

To use the Goto command:

1. **Activate the Event List window for the desired track by clicking on it.**
2. **Choose Goto from the Event List window mini-menu.**

You will be prompted for a location to scroll to.

3. **Enter a time location to scroll to.**

ReInsert

Legend

Graphic and Notation Editing

4. Press OK.

The list will automatically scroll so that the event closest to the time you entered will be at the top.

The ReInsert command inserts an event of the type last chosen with the Insert command. It works exactly like the Insert button except that you don't need to select a type of event from a menu. For example, if you insert a patch change with the Insert button, the next ReInsert command will insert a patch change as well. For more information, see the section called *"Inserting events with the insert button"* on page 272. As a shortcut for choosing Reinsert from the mini-menu, option-click the Insert button.

The legend window can be opened by choosing *Legend* from the Event List mini-menu. The legend window defines each icon found in the Event List.

Legend				
LOCATION	PITCH	ON	OFF	DURATION
1 1 000	♩C3	164	164	1 000
♪	Note			
~	Pitch Bend			
▣	Patch Change			
◆	Bank select			
▲	Controller			
↓	Mono Key Pressure			
⇓	Poly Key Pressure			
□	System Exclusive			
∞	Loops			
📌	Markers			
4/4	Meter Change			
E♭ Major	Key Change			
♩ = 120.0	Tempo Change			

The Graphic Editing and Notation Editing commands open the Graphic Editing or QuickScribe notation windows. Data in the track can be viewed in any one of these three windows. Editing in a window will affect the data in the track, regardless of which window you have activated. For example, if you edit a note while in the Event List window, the change will be displayed in the Graphic Editing window as well.

Types of Events

Notes

♪ C3

There are several types of events displayed in the Event List window. Most are MIDI data; some are events internal to Performer such as tempo and meter changes. The type of each event is identified by a small icon. The following section describes the appearance and parameters of each type of event.

A note event comprises a start time, a pitch, an on velocity, an off velocity and a duration. The pitch is expressed as a note name and an octave, e.g. C#4. C3 is middle C on a keyboard, although with some patches it might sound in another octave. The spelling of the note name is determined by the key signature you choose.

On velocity is a value that represents how hard a note is struck. The harder you strike a note, the faster you are pressing it down, hence the term "velocity". Off velocity is a value that represents the speed at which a note is released. Many synthesizers don't respond to off velocities, but some use this information to determine envelope decay parameters or other effects. Values of on and off velocities range from zero to 127. You can omit on and off velocities from the Event List display by unchecking them in the View Filter.

Duration is the time between the attack and release of the note. It is displayed in quarter notes and ticks, e.g. 3|240. Note that this is different from measure time, displayed in measures, beats and ticks. There are 480 ticks per quarter note. A note must have a minimum duration of one tick (0|001).

Pitch Bend

~1132

A pitch bend event comprises a start time and a value. Pitch bend data causes the pitch of notes being played to change. When a stream of pitch bend data occurs, a smooth pitch change can be approximated. A value of zero signifies no bend, increasing values bend the pitch up, and decreasing values bend it down. Values are in the range -8192 to 8191.

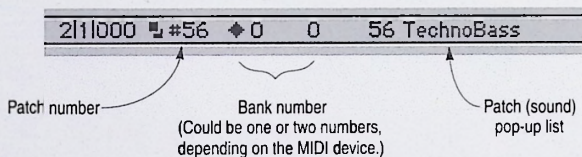
There is no specific MIDI standard for how much of a bend specific pitch bend data causes: each synthesizer may be different. Also, some synthesizers do not respond to all 16,384 values; adjacent values may produce the same result.

Patch Change

■ 39

A patch change event has a start time and a patch change number. When a synthesizer receives a patch change, it changes to the patch specified by that number.

Patch changes are generally in the range 0 to 127. Some MIDI devices use the range 1 to 128. In such cases, the patch number displayed in Performer may be one less than the number on the MIDI module. Performer thus would display a zero when a 1 was sent, a 9 when a 10 was sent, etc. Some units have more than 128 patches. Since MIDI only allows for 128 different patch values to be sent, there is no direct way to access patches above the 127th one. In this case, there is usually some way to set up banks (groups) of patches and switch banks via a "bank select" MIDI command. If this is the case, and the device has been set up with bank select messages in FreeMIDI, patch change messages for the device appear with the appropriate bank select number as shown below. The bank number automatically appears in tracks assigned to a device that was given the bank select property in FreeMIDI Setup. (See "Setting up bank select devices in FreeMIDI" on page 749.) If the track is assigned to a non-bank select device, no bank number is shown.



Song Change

1|1|000 Song #127

Song changes, also called *song select*, select songs (a collection of rhythmic patterns) on drum machines. They have a value range of zero to 127. Song changes have no channel number when sent over MIDI: all connected instruments receive them.

Mono Key Pressure

± 56

Also known as aftertouch or channel pressure, this is actually a special kind of controller. A mono key pressure event has a start time and a value between zero and 127. If you continue to press down a key after you play a note, mono key pressure information is sent. The harder you press, the higher the value. Mono key pressure can be used for such things as changing the timbre (tone quality) of a sound or controlling the amount and depth of vibrato.

Mono key pressure data can be voluminous, filling up memory very quickly. If you aren't using mono key pressure information, it is best to use the Input Filter to filter it out while recording. Because of its

Poly Key Pressure

± 119

great volume, mono key pressure data can sometimes cause the playback speed to slow down when output with a fair amount of other MIDI data.

This is similar to mono key pressure except that each key can generate its own pressure information instead of one pressure level for the whole instrument. This allows for much more subtle and complicated effects using aftertouch. A poly key pressure event has a start time, a pitch and a value between zero and 127.

Controllers

▲ #64

A controller event has a start time, a controller number which identifies the device being used (on the MIDI input keyboard), and a value. Continuous controllers (such as wheels and sliders) are generally numbered in the range zero to 63. These have value ranges from zero to 127. Switch controllers (on/off types like a sustain pedal) are numbered from 64 to 93 and have values of either On or Off. Controllers from 93 to 127 are reserved for future definitions.

Each MIDI device can interpret controller data differently. Thus, data from the same controller might be used differently on two different synthesizers. To determine how a controller behaves on a particular unit, consult the owner's manual, and see the *Hints* section below.

System Exclusive

▣ F0 43 01 05 7C 28 32 F7

System exclusive data can be used for a variety of purposes. Each musical instrument manufacturer defines special kinds of data that are particular to specific instruments: patch dumps, drum machine patterns, tuning information, sample data and so forth. System exclusive data begins with an ID code specifying the manufacturer followed by the actual data.

Performer lets you view and edit system exclusive data in hexadecimal (base 16) notation. See the *System Exclusive* chapter for more information.

Tune Request

Tune request

The tune request is used for analog synthesizers, prompting them to tune their oscillators. It has no value and does not have a channel number when sent over MIDI: all connected MIDI instruments will respond to it if applicable.

Mode Changes

MIDI modes are used to set synthesizers to respond to MIDI data in different ways. Not all synthesizers respond to all MIDI modes.

Omni on
Omni off
Mono mode
Poly mode
Local control on
Local control off
All notes off

Omni Mode

A synthesizer is always in either omni on or omni off mode. In omni on, a synthesizer responds to all data on any channel, i.e. all 16 channels at once. In omni off, a synthesizer responds to data only on its assigned channel. Usually, you can change this mode on the synthesizer's front panel. Some synthesizers allow you to change this mode via MIDI.

Mono Mode


In mono mode with omni off, a synthesizer splits itself into a number of independent monophonic synthesizers, each responding to one channel. The assigned channel number of the synthesizer determines the channels it responds to. If you had an eight-voice synthesizer assigned to channel 2, it would respond to data on channels 2, 3, 4, 5, 6, 7, 8, and 9.

In mono mode with omni on, a synthesizer receives data from all channels but acts as a single voice synthesizer. This combination is not very useful.


Local Control

A synthesizer is always in either local control on or local control off mode. In local control on mode, the synthesizer works normally: notes pressed on the keyboard are played by the synthesizer unit. In local control off mode, the keyboard is disconnected from the synthesizer unit. The keyboard sends out data directly through MIDI: the synthesizer only plays data received over MIDI. This allows you to use a synthesizer as a controller while simultaneously using its synthesizer unit to play something else.


Markers

 Bridge

Meter Changes

4/4 click 

Tempo Changes

1|2|000  = 172.66

Key Changes

1|1|000 C Minor

Loops

All Notes Off

The all notes off message causes all notes that are currently sustaining to be shut off.


Markers are displayed for reference in the Event Editing windows for all tracks in a sequence. They cannot be edited in the Event Editing windows for normal tracks. Unlocked markers can be edited in the Conductor track. Locked markers can only be edited in the Markers window.

Meter changes are displayed for reference in the Event Editing windows for all tracks in a sequence. They can only be edited in the Event Editing windows for the Conductor track. Meter change events display the time signature (the number of beats per bar, over the duration value which gets the beat) and the click value (the duration value between metronome clicks). See the *Change Meter* chapter for more information.

Tempo changes can be displayed and edited in the Event Editing windows for the Conductor track. Tempo change events display the duration value for the tempo marking, i.e. which value the tempo is measured in (quarter note = 90 for example), and the tempo value itself, which signifies the number of beats per minute. See the *Change Tempo* chapter for more information.

Key changes are displayed for reference in the Event Editing windows for all tracks in a sequence. They can only be edited in the Event Editing windows for the Conductor track. Key change events display the name of the key. See the *Change Key* chapter for more information.

The loops for each track are displayed in the Event Editing windows for that track. A loop event displays the start and end time of the loop and the number of times the loop is played. A loop event can be edited in the Event Editing windows for the track that contains it. Events within loops are indented to the right for clarity. See the chapter *Looping* for more details.

2|1|000  until 4|1|000 :infinite

Editing in an Event List

Commands in the Edit and Region menus work on events in Event List windows. This gives you the ability to precisely specify which events to modify. Using the Event List window to edit events allows you to work with one track at a time.

To edit events in an Event List window, you must first select them, and then execute an edit or region command. For information on selecting events, refer to the *Quick Reference* section at beginning of this chapter. Selected events turn black to indicate that they are selected. Here are a few important things to remember when editing in the Event List.

- **Only highlighted events will be affected by the command.** Also, events not visible due to the View Filter setting will not be affected.
- **The Edit Filter has no effect on highlighted events.** Use the View Filter to display and edit only those events which you wish to edit. If you wish to use the Edit Filter, select events using the Edit bar in the Tracks window.
- **The Paste and Merge commands on the Edit menu work as follows:** If one or more events are highlighted, the contents of the Clipboard are pasted at the time of the first highlighted event. If no events are highlighted, you will be asked for the time at which the contents of the Clipboard should be inserted.
- **The Snip, Repeat, and Retrograde commands do not affect highlighted events.** When using these commands, you must use the Edit bar in the Tracks window to select events.
- **Markers, key changes, meter changes, and tempo changes can be edited only in the Conductor track.** They are not affected when highlighted or when you attempt to edit them directly in normal Event Lists. This allows you to select large regions of events without having to worry about excluding these events.

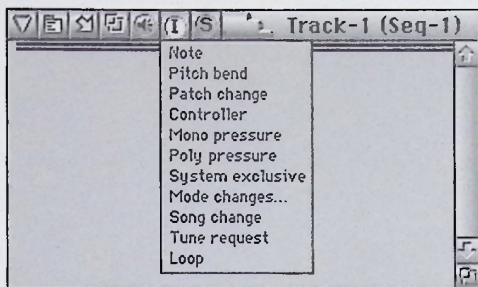
Inserting events with the insert button

The Insert button on the Event List window title bar inserts an event of the specified type. To insert an event:

1. **Activate the Event List window for the desired track by clicking on it.**

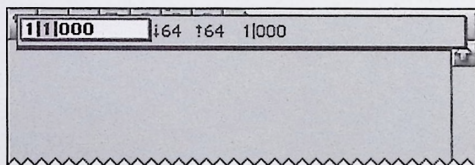
2. Press the insert button in the title bar.

A menu will appear containing the different types of events you can insert.



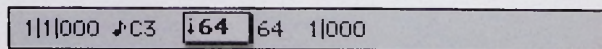
3. Choose the type of event you wish to insert.

An event will pop up in front of the Event List.



4. Specify the time at which the event is to be inserted.

If you wish to change other values for the event, use the Tab or the left and right arrow keys to move between the value fields. For example, tabbing 3 times in the above example moves the active field as shown below.



Editing Individual Events

5. To enter the event, press Return.

The event will be inserted into the Event List. If you will be inserting another event of the same kind, press the Enter key instead of Return. This will insert the event and present you with another to be inserted. Click outside of the event to cancel the Insert.

When inserting Mode changes, or System Exclusive data, extra steps are required. To insert a Mode change, select Mode changes from the pop-up Insert menu. The pop-up menu will change to display the options for Mode changes; select the desired command and continue as described above.

See the *System Exclusive* chapter for information on inserting this type of data. See the chapter *Change Key* for information on inserting key changes.

To edit any parameter field of an event in the Event List window, hold down the Option key and click on the field. You can also double-click on the field. In most cases, a pop-up box will appear surrounding that field in which you can enter the value you want; some events display a dialog box.

22 1 240	♯Ab4	♯55	♯90	0 240
22 2 000	♯Ab4	♯55	♯90	0 240
22 2 240	♯Ab4	♯55	♯90	0 240
23 1 000	♯F4	♯55	♯90	4 000
23 1 240	♯F4	♯55	♯90	0 240

Once you begin to edit events by using pop-up boxes, you can use the Tab, Enter, and arrow keys to move between fields and events.

Here is a list of the keys you can use when a pop-up box is present:

- *Return* enters the value and closes the pop-up box.
- *Command-period* cancels the entry.
- *The Enter and Down Arrow keys* enter the value and highlight the same field in the next event.
- *The Up Arrow key* enters the value and highlights same field in the previous event.

Changing Event Values from a MIDI Controller

- *Tab and the Right and Left Arrow keys* move through each field of an event.

You can use your MIDI input keyboard to enter values for events. When a pop-up box is present for a parameter field, if you send an event over MIDI of the same type as the parameter, it will be entered into the field. For example, if the pitch field of a note event is highlighted, playing a note on your MIDI controller will set the corresponding pitch for the event in Performer.

This technique is particularly useful when you are uncertain of a value. For example, you can set an on velocity for a note by double-clicking on the on velocity field so that it pops up, then hitting a key on your controller until the note velocity sounds correct. Each time you hit the key, the new velocity appears in the pop up box; when you hear the one you want, simply press the Return key to save the value in the Event List.

Remember Times

The Remember Times command is used to remember the beginning and end times of selected regions in the Tracks, Event Editing, and Markers windows.

To remember the beginning and end times of a selected region:

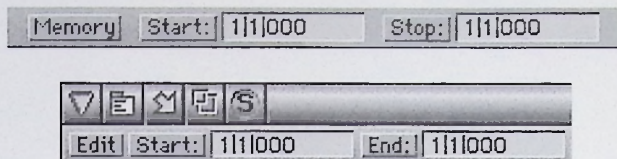
- 1. Activate the window with the times you wish to be remembered.**
- 2. Select the region whose beginning and end times are to be remembered.**

In a Tracks window, specify the Start and End times of the region in the Edit bar; these will be remembered. In an Event Editing window, select a region of events (see the section earlier in this chapter on how to select a region of events in the Event List window; also see the chapter *The Graphic Editing Window*): the times of the first and last events in the selected region will be remembered. In a Markers window, select a region of markers (see the chapter *The Markers Window*): the times of the first and last markers in the selected region will be remembered.

- 3. Choose Remember Times from the Basics menu.**

The beginning and end times are now remembered.

4. To insert the remembered times into the Edit, Memory, or Auto Record Bars, click on the Edit button in the Tracks window edit bar, or click on the Memory or Auto Record button in the Consolidated Control Panel.



The remembered times will be loaded into the Edit Bar of the Tracks window if the word “Edit” is clicked on; they will be loaded into the Memory Bar in the Consolidated Controls panel if the word “Memory” is clicked on; they will be loaded into the Auto Record Bar in the Tracks window if the words “Auto Record” are clicked on.

Audible Mode

Audible Mode allows you to listen to notes one at a time, or phrase by phrase, as you highlight them in a Performer track. This feature appears as a speaker icon in the title bar of each track’s Event Editing windows. Audible Mode provides an easy, intuitive way to see *and hear* an individual note or phrase while you are working in Performer’s editing windows. Notes can be played back one at a time by clicking on them individually or as a phrase by highlighting a region.

Audible Mode playback is similar to pressing the Play button in the Consolidated Controls panel, including MIDI channel assignment and velocity information. If you click on a note and don’t hear anything when Audible Mode is activated, make sure that your MIDI connections are set up properly and that your synthesizer is ready to receive MIDI data. If MIDI data in a track plays back correctly when you press the Play button in the Consolidated Controls panel, it will play back properly in Audible Mode as well.

Enabling Audible Mode

To enable Audible Mode:

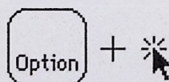
1. Open the Event List or Graphic Editing window for a track.

Either double-click on the track name in the Tracks window, or click on the track name once and chose *Edit* from the mini-menu.



Playing Individual Notes

Playing Phrases



2. To turn on Audible Mode, click once on the speaker icon in the title bar.

The icon will highlight to indicate that Audible Mode is activated. When Audible Mode is activated, it affects all Event Editing windows.

3. To turn off Audible Mode, click on the speaker icon again.

The icon will deselect to indicate that Audible Mode is turned off.

When Audible Mode is enabled and you click on a note in the Event Editing Window, the note will simultaneously select and play back on your MIDI instrument. The note will sustain for as long as you hold down the mouse button. When you release the mouse, the note will stop. If you click on a note and drag up or down to highlight adjacent notes, each note will play individually as it highlights. Notes will play in the same fashion when you shift-click to highlight discontinuous (non-adjacent) notes. If you shift-click to deselect an already highlighted note, the note will play when it unhighlights. In general, when you highlight or unhighlight a note, it will play back for as long as you hold down the mouse.

Using the Audible Mode speaker icon, it is also possible to play a *group* of notes that are highlighted in the Event List.

To play a phrase:

1. Highlight one or more MIDI events in the Event List window.

You can highlight the events by clicking and dragging, or by shift-clicking on discontinuous events.

2. Option-click on the speaker icon on the Event List title bar.

The speaker icon does not have to be highlighted. Option-clicking—even if Audible Mode is not currently enabled—will cause the highlighted events to play back.

When you option-click on the speaker icon, all MIDI data that are currently highlighted will play back with the proper duration and velocities. The tempo of the phrase is determined by the current

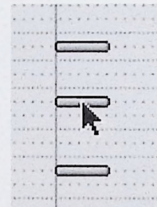
tempo slider setting in the Metronome panel. Playback can be stopped at any time by clicking the mouse or striking a key on the Macintosh keyboard.

The phrase can be a contiguous (adjacent) group of notes that you have highlighted by clicking and dragging or a discontinuous group of notes that you have selected by shift-clicking. Notes that are not highlighted will not play.

Playing Chords

Audible Mode allows you to hear chords one note at a time, all at once, or only with selected notes. To listen to a chord one note at a time, enable Audible Mode by clicking on the speaker icon. Click on the first note of the chord and drag downward while holding down the mouse button. Or you can start on the last note and drag upward. Each note in the chord will play as it highlights.

	♩C3	193	164	0 120
1 3 240	♩A3	177	164	0 120
	♩F3	189	164	0 120
	♩C3	183	164	0 120
1 4 000	♩A3	183	164	0 120
	♩F3	190	164	0 120



To hear the entire chord at once, highlight all of the notes and option-click on the speaker icon. To hear only selected notes within the chord, highlight only the notes you wish to hear and option-click on the speaker icon.

Playing MIDI Data Other Than Notes

Only notes will play back when you highlight them in Audible Mode. Other MIDI events such as controllers or pitch bend can be played with the play-phrase feature. For example, to send a patch change to a synthesizer directly from the Event List, highlight the patch change and option-click on the Audible Mode speaker icon. System exclusive data cannot be played back in Audible Mode. To play back a system exclusive event, press the Play button in the Consolidated Controls panel.

Hints

You can use the Event List to find out useful information about the way your MIDI instruments output data. For example, you can use the Event List window to determine the controller number for a wheel, slider, foot pedal, etc. Make sure that the MIDI output from the device in question connects to the MIDI input of your interface; then:

- 1. Locate a controller event in an Event Edit window.**

If you can't find one, insert one.

- 2. Option-click on the controller number field to make a pop-up box appear.**

- 3. Move the controller on your input keyboard.**

The controller number will be displayed in the pop-up box.

- 4. Press the Return key to save the event, or the Command and period keys to close the pop-up box without making any changes.**

You can use a similar technique to find the patch numbers that correspond to each preset on a MIDI module. Make sure that the MIDI output from the device in question connects to the MIDI input of your interface; then:

- 1. Find a Patch Change event in an Event List window.**

If you can't find one, insert one.

- 2. Option-click on the patch number field to make a pop-up box appear.**

- 3. Select the preset or patch on the MIDI module.**

The patch number box in Performer will display the MIDI patch number corresponding to the preset.

- 4. Press the Return key to save the event, or the Command and period keys to close the pop-up box without making any changes.**

You can insert multiple events of the same type quickly by first inserting the event, selecting a region including the event by setting the Edit bar in the Tracks window, and then choosing Repeat from

the Edit menu. This will effectively duplicate the event the specified number of times. You can then go back and edit the locations and values of each event.

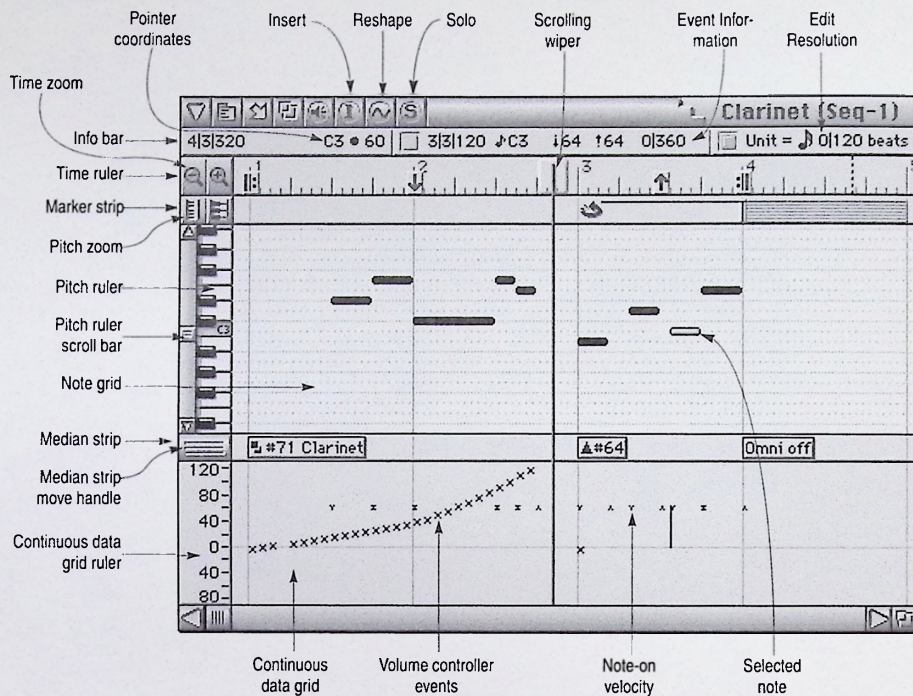
Chapter 21 *The Graphic Editing Window*

Each track in a Performer sequence can be viewed with the Graphic Editing window. The Graphic Editing window plots notes, velocities, and MIDI controller data on a scrolling, piano-roll graph that makes melodies, chords, dynamics, and tempo changes easy to recognize. Graphic editing is provided as a visual alternative to the numeric display in Performer's Event List window. All tracks can be viewed with either window at any time.

The Graphic Editing window clearly organizes information by displaying MIDI data in the center of the window and then surrounding the data with descriptive information such as loop indicators, markers, key changes, and meter changes. MIDI data is placed on two grids flanked by rulers that precisely measure location and value. Best of all, Performer's Graphic Editing window lets you see all types of data—notes, controllers, and pitch bend—in one window.

Quick Reference

The diagram below and the following *Quick Reference* section describe the basic features of the Graphic Editing window:



Information bar: Displays precise information about mouse pointer location, currently selected MIDI data, and editing resolution. The bar is divided into three boxes: the Pointer Coordinates Box, the Event Information Box, and the Edit Resolution Box.

Pointer Coordinates Box: Displays the mouse pointer's current location with respect to the Time, Pitch and Continuous Data rulers.

Insert Button: Pops up the *Insert* menu when clicked, from which any type of MIDI event can be chosen for insertion.

Reshape Button: Changes the mouse pointer to a cross hair that reshapes continuous data curves when you drag over them in the Continuous Data Grid.

Solo button: Mutes all other tracks during playback.

Event Information Box: Displays the currently selected note as it would appear in the Event List window. If a region is selected by dragging in the Time Ruler, this box shows the region's start and end time. If a group of events is selected, this box displays information about the last event that was selected. If a continuous data event is selected, events of that data type can be viewed alone by clicking the accompanying Quick-Filter check box.

Edit Resolution Box: Displays the current time resolution for editing. When the check box is selected, notes and data will 'snap' to locations that correspond to the resolution displayed. If the check box is deselected, data will not 'snap to grid'. Edit resolution can be changed by typing in a different number of beats|ticks, or by clicking on the note and selecting a duration from the resulting pop-up menu.

Time Ruler: Measures time in any combination of Performer's three time formats: measures|beats|ticks, SMPTE time, and real time. The Time Ruler can zoom in and out to enlarge or reduce the Note Grid and Continuous Data Grid.

Main Ruler Selector: Changes an auxiliary ruler into the main ruler. The main ruler is the lowest ruler displayed and determines the time format for editing. Auxiliary rulers are for visual reference only.

Marker Strip: Displays markers, meter changes, key changes, and loops. Loops can be edited in this strip. Markers and meter changes must be edited in the Conductor track or Markers window. No MIDI data appears in the Marker Strip.

Note Grid: Displays notes as horizontal bars on a time vs. pitch grid. Only notes are displayed on this grid. Pitch is determined vertically by the pitch ruler on the left. Location and duration are measured by the Time Ruler above, with duration determined by the length of the bar. Notes can be edited with the mouse one at a time, in a group, or by region.

Selected Note: When a note is selected, it highlights. Complete information about the selected note will automatically appear in the Event Information box at the top of the window. Drag the end of the note to change its duration.

Median Strip: Displays discrete MIDI events such as patch changes, mode changes, switch controllers like #64 (sustain), and system exclusive events. Each type is displayed as an icon, defined by the Legend window. The Median Strip serves as a border between the Note Grid and the Continuous Data grid; it can be dragged up and down with the handles at either end to proportionally resize the grids.

Median Strip Move Handle: Moves the Median Strip up or down. Dragging up will shrink the Note Grid and enlarge the Continuous Data Grid; dragging down will enlarge the Note Grid and shrink the Continuous Data Grid.

Continuous Data Grid: Displays continuous data as small icons on a time vs. value grid. Pitch bend, key pressure, controllers, and note velocities are displayed simultaneously on this grid. An event's location is measured by the Time Ruler at the top of the window. Value is determined by the Continuous Data Ruler on the left. Each type of continuous data has a unique icon.

Continuous Data Ruler: Measures continuous data events. This ruler can be toggled between three scales: a controller scale from 0 to 127, whose origin rests at the bottom of the window; a pitch bend scale from -8192 to 8191, whose origin appears in the middle of the grid; and a combination scale that shows both pitch bend and controller data at once on a -80 to 127 scale. Toggle among the three scales by clicking on the ruler.

Pitch Ruler: Measures pitch along the vertical axis with a standard keyboard format. Each C-natural indicates the octave. For clarity, dotted lines extend to the right from each key: a heavy dotted line for black keys and a light dotted line for white keys. With the Pitch Zoom icon, this ruler can zoom in or out to increase or decrease the number of visible octaves.

Basics

Viewing Data three different ways

Opening the Graphic Editing Window

Pitch Zoom Icon: Zooms the pitch ruler in or out. Click on the large keys to zoom in; click on the smaller keys to zoom out. Four pitch zoom settings are available. Zooming out allows you to see more octaves at once. Zooming in allows you to focus on a particular pitch range.

Time Zoom Icon: Zooms the Time Ruler in or out. Click on the 'in-pointing' arrows in the upper half to zoom in; click on the 'out-pointing' arrows in the lower half to zoom out. Eight time-zoom levels are available. Zooming out gives you an overview; zooming in focuses on a shorter period of time at higher resolution. Editing can be done at any zoom level.

Graphic Editing is available in all tracks, including the Conductor Track. The piano-roll display of notes and the Continuous Data Grid allows you to manipulate MIDI data using many of the conventions established by Macintosh paint programs. For example, you can drag a note to change its location; you can lengthen the note by dragging its handle. If the Edit Resolution feature is enabled, the note, when moved, will 'snap' to a time grid. You can select a group of notes by dragging a selection box over them. When you release the mouse, notes inside the box will become selected. Most of the features described in this chapter can be used during playback.

Each track in a Performer sequence contains MIDI data. This data can be viewed with the Event List window, the Graphic Editing window, or the QuickScribe notation window. The data in the track is the same regardless of which window you use. For example, if you edit data in the Graphic Editing window, the changes you make will be immediately reflected in the track's Event List window.

To open the Graphic Editing window for a track:

1. **Activate the Tracks window that contains the track you wish to edit.**

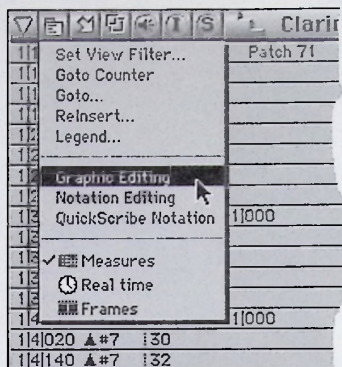
Click once on the Track window to activate it.

2. **Command-double-click the track name.**

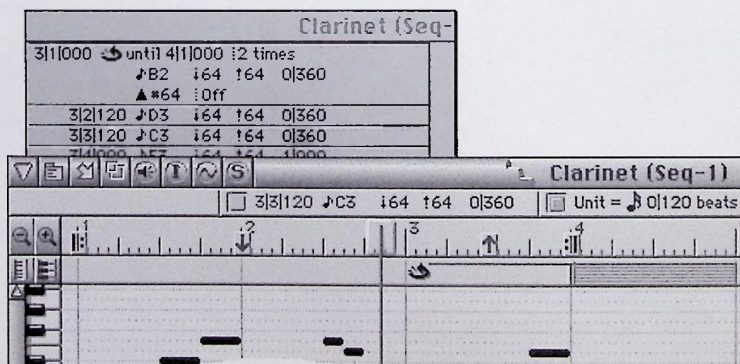
The Graphic Editing window will appear.

You can also open the Graphic Editing window by choosing Graphic Editing from the Event List window mini-menu.

Displaying More Than One Event Editing Window at a Time



All three types of Event Editing windows for a single track can be open at the same time. Changes in one window are immediately reflected in the other. The current position of each window is remembered when you save the file.



Scrolling During Playback

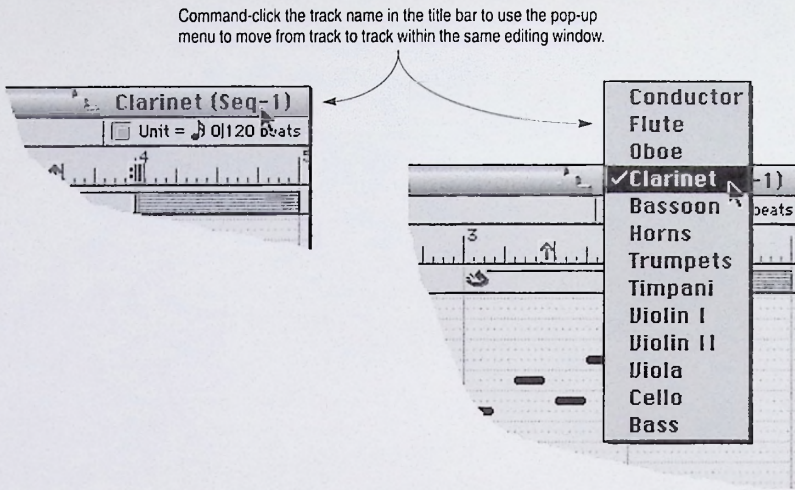
The *Auto-Scroll* command in the Basics menu can make the Graphic Editing window scroll during playback. In addition, the window will automatically open to the current playback location of the sequence. Please refer to the Auto-Scrolling section in the *Playback* chapter for more information.

Switching to a Different Track Using the Title Bar Pop-up Menu

If you have an event editing window open for a track, you can switch to a different track in the same window. To do so:

1. Command-click the track name in the title bar.

A pop-up menu appears as shown below.



2. Choose the desired track.

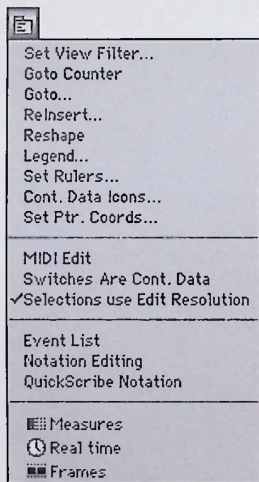
The contents of the window changes to the track you select.

This menu is available in the title bar of every track's Graphic Editing window.

Set View Filter: Calls up a dialog box in which you specify types of events to be visible in the Graphic Editing window. The View Filter applies to all tracks and affects both the Graphic Editing and Event List windows.

Goto Counter: Automatically scrolls the graphic display to the time currently displayed in the Counter. The counter location will appear at the left-most position in the window.

The Graphic Editing Window Mini-menu



Goto: Automatically scrolls the graphic display to a time you specify, which will appear at the left-most position in the window.

ReInsert: Inserts an event of the same type that you last inserted. This is the same as the Insert command but you are not prompted for the type of event. This command can also be invoked by option-clicking on the Insert (I) button on the Graphic Editing window title bar.

Reshape: Changes the mouse pointer to a cross hair that reshapes selected continuous data curves when you drag over them in the Continuous Data Grid. This command can also be invoked by clicking the Reshape button in the title bar.

Legend: Produces a window that shows the icon representing each type of MIDI event.

Set Rulers: Allows you to configure the Time Ruler in any combination of Performer's three time formats: measures | beats | ticks, SMPTE time, and real time. The main ruler is displayed lowest and determines the time format for editing.

Cont. Data Icons: Opens the Continuous Data Icons window, which displays icons for each type of continuous data. This window also allows you to reassign controller icons.

Set Ptr. Coords...(Set Pointer Coordinates): Allows you to choose what time and pitch formats will be displayed in the Pointer Coordinates Box.

MIDI Edit: Allows data in the graphic editing window to be edited from a MIDI controller.

Switches are Cont. Data: Causes all controllers, including switch controllers #64 and above, to be displayed and edited as continuous controllers. This is useful for MIDI devices, such as MIDI-controlled lighting consoles, that use all MIDI controllers as continuous controllers.

Selections use Edit Resolution: Causes the cursor to snap to the edit resolution when dragging to make selections in the note grid, time ruler, and continuous data grid.

Event List: Opens the track's Event List window.

The Insert Button



The Reshape Button



The Information Bar

Notation Editing: Opens the track's Notation Editing window.

QuickScribe Notation: Opens the QuickScribe notation window with the track displayed in it by itself.

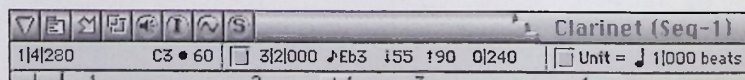
Measures/Real time/Frames: These checkable entries control which time formats are displayed in the Information Bar and Event List.

The Insert button appears in the title bar of the Graphic Editing window. It only appears when the window is in Graphic Editing mode. When the Insert button is clicked, the Insert menu appears, from which you can choose the desired event to be inserted by clicking once on the event type. An event will pop up to be inserted.

Option-clicking the Insert button is just like choosing ReInsert from the mini-menu.

The Reshape button appears next to the Insert button. When the Reshape button is clicked, the mouse pointer changes to a cross hair. When you drag the cross hair over a selected curve in the Continuous Data Grid, the curve will reshape as you drag. For more information about reshaping continuous data, see the section later in this chapter called *Reshaping a Continuous Data Curve*.

The Information Bar at the top of the Graphic Editing window appears just below the title bar and is divided into three sections separated by doubled lines. The sections display precise, numeric information about mouse location, currently selected data, and minimum editing resolution. MIDI data in the bar is displayed as it would appear in the Event List window.



Sometimes, information in each box may extend beyond the space provided and will be clipped on the right side of the box. If so, enlarge the Information Bar by dragging the window's grow box to the right.

The Pointer Coordinates Box

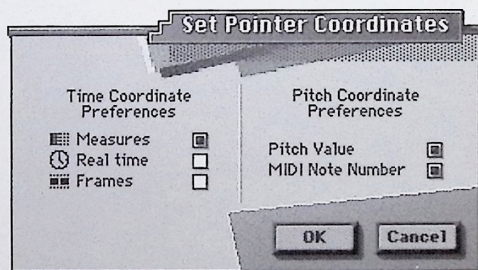
The Pointer Coordinates box is the left-most section in the Information Bar. It displays the current location of the mouse pointer with respect to the Time, Pitch and Continuous Data rulers. Values in this box are continually updated as the mouse pointer moves over the Note Grid and Continuous Data grid, giving you immediate, numerical accuracy when manipulating data with the mouse.

The pointer's horizontal coordinate can be expressed in measures|beats|ticks, SMPTE time, or real time. Which time formats are shown is determined by the Set Pointer Coordinates menu item in the Graphic Editing window mini-menu.

To set the Pointer Coordinates box display:

1. **Choose Set Ptr. Coords... from the Graphic Editing window mini-menu.**

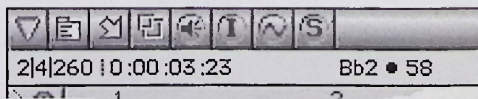
A dialog box appears.

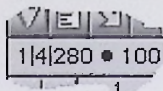
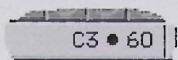


2. **Check the time and pitch formats you prefer.**

You can select any time format combination, independent of the Time rulers that are displayed.

3. **Click OK to confirm your choice or Cancel to cancel it.**





The Event Information Box

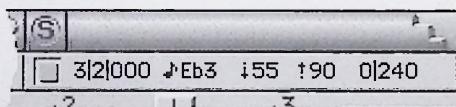
The pointer's time and pitch coordinates will be expressed in each selected format. For example, if both Measures and Frames are checked in the mini-menu, the mouse position will be displayed in both measures and SMPTE time.

The pointer's vertical coordinate depends on its location: if it is in the Note Grid, the vertical coordinate may be expressed as a pitch, such as C3, and its MIDI note number, 60.

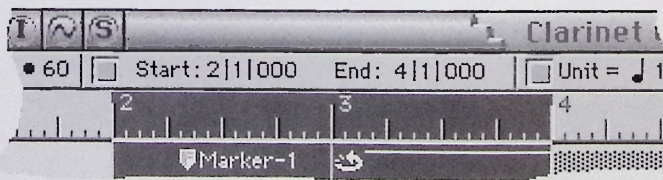
If the pointer is in the Continuous Data Grid, the vertical coordinate is expressed as a continuous data value on one of three scales: 0 to 127, -8192 to 8191, or -80 to 127, depending which is currently displayed by the Continuous Data Ruler.

If the pointer is in the Median Strip, no vertical coordinate is shown.

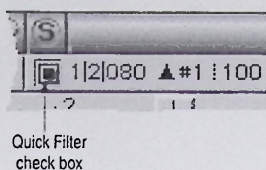
The Event Information box displays numerical information about a single event or region that has been selected. This box displays data in the same way as it appears in the Event List window. For example, a selected note will appear with its measures|beats|ticks location, pitch, on and off velocity, and duration.



If a region is selected by dragging in the Time Ruler, the Event Information box displays the start and end locations of the selected region.



If more than one event is selected by shift-clicking or dragging, the box displays information about the event that was last clicked.



When a continuous data event is selected in the Continuous Data Grid, the *Quick-Filter* check box appears next to the event's data. When clicked, the check box causes all other data types to temporarily disappear from the Continuous Data Grid; the selected type remains visible. For example, if you select a controller #3 event and click the Quick-Filter check box, all controller #3's will remain visible and other data types, such as pitch bend and velocities, will disappear. To make the other data types reappear, deselect the check box.

Information displayed in the Event Information box can be pop-edited by clicking an item. As normal, the Tab key and arrow keys move from field to field. Press Return to confirm any changes you have made, and the event's graphic display will change to reflect the modifications.

Sometimes, information in this box may extend beyond the space provided and will be clipped on the right side of the box. If so, enlarge the Information Bar by dragging the window's grow box to the right.

The Edit Resolution Box

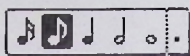
The Edit Resolution box determines the minimum time unit for editing. The minimum time unit consists of a duration, such as 240 ticks, or one eighth note. MIDI events, note durations, loops, region boundaries, Memory-cycle repeat barlines, or any object that can be dragged horizontally will only move in time increments equal to the value of the edit resolution unit. Edit resolution only affects MIDI data when the data is moved horizontally with the mouse.

The Edit Resolution box can be enabled or disabled with the check box provided. When the check box is selected, the current resolution unit is shown as a note duration accompanied by a number of beats and ticks. When disabled, the *Unit* = and *beats* indicators become greyed out and editing occurs at maximum resolution, which is either one tick, one frame, or one screen pixel depending on the time zoom setting.

You can change the edit resolution at any time. To change the edit resolution:

1. **Click on the note displayed in the Edit Resolution box.**

A pop-up menu will appear that displays note durations.



2. Select a note duration from the pop-up menu and release the mouse.

The duration you chose will now be displayed in the box. Note also that the number of beats and ticks now equals the note duration.

OR

3. Click on the beats/ticks values.

A pop-up box will appear.

4. Type in a number of beats and ticks in the box provided and press Return to confirm your choice.

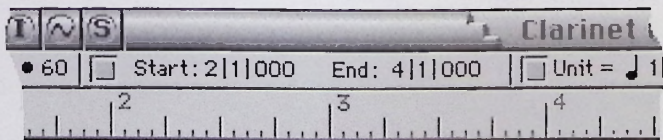
Note that when you type in a number of beats and/or ticks, the note displayed next to the ticks box will grey out if the tick value does not equal a standard duration, such as 120 or 240 ticks.

Also note that when you zoom in the Time ruler, Edit Resolution may cause data to seem like it is "stuck"; that is, data will not move when you try to drag it. This is because the Edit Resolution is larger than the distance you are dragging. To "unstick" the data, deselect the Edit Resolution check box. Or hold down the option key while dragging. Doing so overrides the edit resolution temporarily. The option key temporarily overrides the current setting of the Edit Resolution check box.

The Edit Resolution box affects all Graphic Editing windows. It does not affect the Event List window.

The Time Ruler

The Time Ruler measures time horizontally for all MIDI data in the Note Grid, the Median Strip, and the Continuous Data Grid.



Using the time ruler to select a playback point

Choosing Time Formats

The Time Ruler consists of a main ruler, which appears just above the Marker Strip. Auxiliary rulers that display other time formats can also be displayed above the main ruler.

To help line up MIDI events with the ruler, vertical grid lines extend downwards from the main ruler, through both grids and the Median Strip, to the bottom of the window. These hairlines are placed at regular intervals such that they remain a similar distance apart between zoom levels.

To help align the mouse pointer with the Time Ruler, a dotted hairline inside the Time Ruler indicates the current position of the mouse.

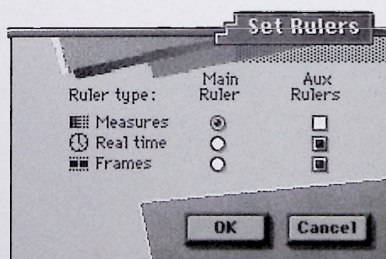
You can double-click a segment in the time ruler to make Performer jump to that location for playback. You can do so when Performer is stopped or during playback. This is an ideal way to quickly locate to a desired point with the mouse.

The Time Ruler can display time in any combination of Performer's three time formats: measures | beats | ticks, SMPTE, and real time. You can choose which formats to display with the Set Rulers dialog box.

To choose the time format(s) for the Time Ruler:

1. Choose **Set Rulers** from the **Graphic Editing** window mini-menu.

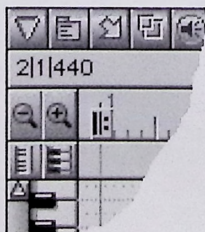
The Set Rulers dialog box will appear.



Changing an Auxiliary Ruler into the Main Ruler

Zooming the Time Ruler

Zooming



2. Choose a main ruler and any auxiliary rulers that you prefer.

The main ruler appears lowest and determines the time format for editing. Auxiliary rulers appear above the main ruler. If the Tempo Control setting is currently set to the Conductor track, only Measures can be displayed as the main time ruler.

3. Click OK to confirm your choice or Cancel to cancel it.

To quickly switch an auxiliary ruler into the Main Ruler:

- Click the auxiliary ruler's time format icon in the Main Ruler Selector.

The ruler will become the main ruler and appear at the bottom. If the Tempo Control setting is currently set to the Conductor track, only Measures can be displayed as the main time ruler.

The Time Ruler can be zoomed in or out with the Time Ruler Zoom icon to the left of the ruler. Zooming out gives you an overview by compressing greater amounts of time into the window; zooming in focuses on a shorter period of time at higher resolution. See the following section called *Zooming* for more information.

The Time Zoom and Pitch Zoom icons allow you to 'zoom' the time and pitch rulers in and out. Zooming in Performer is similar to the magnification feature found in most Macintosh graphics programs. When zooming in, objects become larger as the display magnifies a portion of the screen. When zooming out, objects shrink as the display encompasses a larger region.

Performer's zoom feature is based on the same idea; however, the Time and Pitch Zoom icons allow the time and pitch axes to zoom *independently*. For example, you can zoom *out* the Time Ruler to see more measures at one time, and zoom *in* the Pitch Ruler to focus on a specific pitch range.

Because pitch and time zooming are exclusive from one another, notes on the Note Grid will not magnify or shrink in the same manner as a standard zoom feature. In addition, the grid lines remain approximately the same distance apart, regardless of the zoom setting.

Zooming the Time Ruler

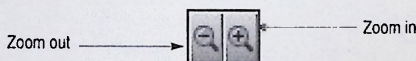


The Time Zoom icons zooms the Time Ruler. They appear just to the left of the Time Ruler. Zooming out gives you an overview by compressing more measures into the window; zooming in focuses on a shorter period of time at a higher viewing resolution. The dotted hairlines extending from the Time Ruler remain approximately the same distance apart, regardless of the zoom setting.

The Time Ruler provides 8 zoom levels if the main ruler is displaying measures and beats or real time. It provides 7 zoom levels when the main ruler displays SMPTE time. When zooming out, notes with extremely short durations will remain visible.

Editing is allowed at any time zoom setting. However, the current zoom level may affect the resolution at which events can be edited. For example, let's say that the edit resolution unit is set to 20 ticks in the Edit Resolution box. If you zoom the Time Ruler out as far as it can go, you will not be able to drag a note by only 20 ticks because one screen pixel, which is the smallest unit of movement on the Macintosh screen, will equal a time value *greater* than 20 ticks. So, even if you move the note as little as possible, you will still have moved it more than 20 ticks.

In the example above, Performer handles the situation by constraining location to *multiples* of 20 ticks. When you move the note, its new location will become the nearest multiple of 20 ticks, such as 80, 140, or 420 ticks.



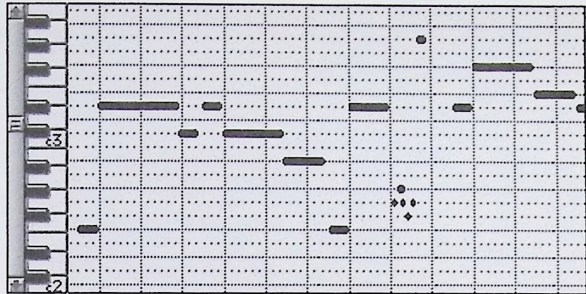
To zoom out, click once (or repeatedly) on the magnifying glass icon with the minus sign (-). To zoom in, click once (or repeatedly) on the magnifying glass icon with the plus sign (+).

Zooming the Pitch Ruler

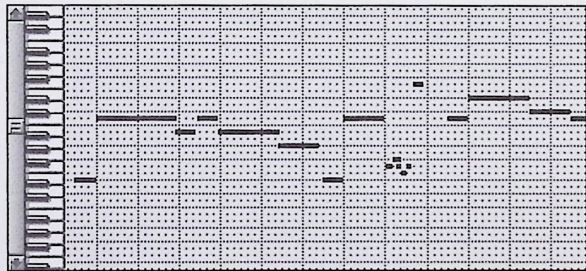


The Pitch Zoom icon zooms the pitch ruler and provides four zoom settings. Zooming out reduces the size of the keys on the ruler, allowing you to see more octaves at once; zooming in enlarges the keys, allowing you to focus on a particular pitch range.

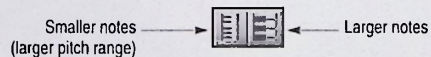
When the Pitch Ruler is zoomed in, notes become larger and the grid displays a smaller pitch range:



When the Pitch Ruler is zoomed out, notes become slightly smaller and the grid displays several octaves:



To see smaller notes and larger pitch range, click once (or repeatedly) on the small keys in the icon. To see larger notes (and a smaller pitch range), click once (or repeatedly) on the large keys in the icon.



Zooming shortcuts

Here are some zooming shortcuts:

Do this:

Command-drag

Command-click

Option-click the zoom out button

Option-click the zoom in button

To zoom as follows:

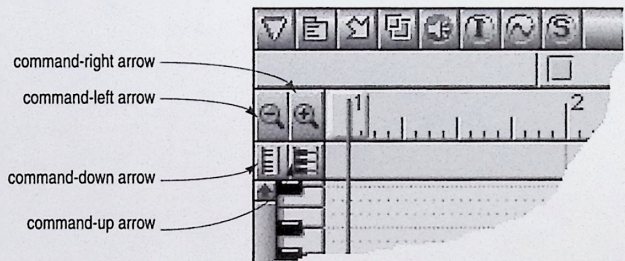
To fill the window with the region you select

To zoom out to the next standard zoom level

To zoom all the way out

To zoom all the way in

The time ruler zoom buttons in the Graphic Editing and Notation Editing window, as well as the pitch ruler zoom buttons, have the keyboard shortcuts as shown below.



Graphic Editing Basics

Using the Shift Key to Constrain Dragging

All of Performer's powerful editing features are available in the Graphic Editing window. Most editing can be done with the mouse using familiar actions like clicking, dragging, and shift-dragging. Such actions can shift data, change note pitch and duration, reshape continuous data curves, and more.

The sections below describe basic features that you will find helpful when working in Performer's graphic environment.

If you hold down the Shift key just before you begin to drag the mouse, the pointer's movement on the screen will be constrained to either the horizontal or vertical axis, depending on the initial

direction of movement. For example, if you click the mouse, hold down the shift key, and drag upwards, the mouse will only move up or down: it will not stray left or right.

Constraining mouse movement in this way is often extremely helpful. For example, if you want to modify just the pitch of a note without changing its location, the Shift key allows you to do so by preventing the mouse from moving left or right.

To constrain the movement of the mouse:

1. **Press on an event without moving the mouse.**
2. **Press the Shift key.**

It is very important to press the mouse *first* and *then* press the shift key. If you press the Shift key first, you will Shift-click, which produces a different action (described in the next section).

3. **Drag in the direction you wish.**

If you drag up or down, the mouse will only move on a vertical axis. If you drag left or right, the mouse will only move on a horizontal axis. Movement will be constrained until you release the mouse.

Option-dragging to Make Copies

Similar to Macintosh graphics programs, option-dragging in the Graphic Editing window leaves the original data unchanged and places a copy of the data at the destination. Option-dragging is a convenient shortcut for copying and pasting.

Shift-clicking to Select Non-adjacent Events

Holding down the Shift key *before* you click serves as a useful way to select more than one event. For example, if you have already selected a note and you want to select another, scroll to the other note (if necessary) and shift-click on it. It will highlight, and the first note will remain highlighted.

Dragging Multiple Data Types

The shift-click method of selection allows you to simultaneously select and drag multiple data types horizontally in the Note grid, Continuous Data grid, Median strip, and Marker strip.

For example, to move a loop containing notes, pitch bend data, and a patch change, select all four data types by shift-clicking and drag them to a new location.

Using Edit Resolution

Selecting a Region Using the Time Ruler

When the Edit Resolution check box is selected, MIDI data that is moved or inserted will 'snap' to positions corresponding to the edit resolution unit shown in the box. For example, if the current edit resolution unit is 240 ticks, events that are moved with the mouse will snap to eighth note positions (every 240 ticks) on the grid. If the Edit Resolution check box is not checked, events will move freely. For more information about the Edit Resolution box, please refer to the section earlier in this chapter called *The Edit Resolution Box*.

In the Graphic Editing window, a region can be selected by dragging to the left or right in the Main Time Ruler. The region inside the ruler highlights, as well as the entire grid beneath, and all visible data within the region becomes selected. In addition, the start and end locations of the region are displayed in the Information Bar. Selecting a region in this fashion is similar to setting the Start and End times in the Tracks window Edit Bar.

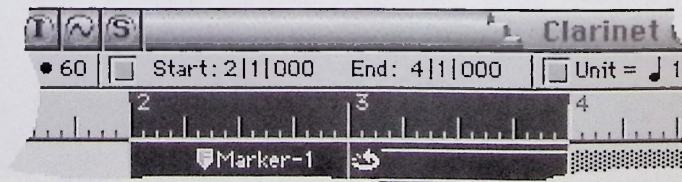
Highlighting a region in this way allows the following commands to function from the Graphic Editing window: *Set Loop*, *Repeat*, *Snip* and *Retrograde*.

Dragging in the Time Ruler is constrained by the current editing resolution.

To select a region with the Time Ruler:

1. **Select the desired edit resolution.**
2. **Click and drag on the Main Time Ruler.**

The start and end locations of the region are constrained by the current edit resolution. You can drag to the left or right.



Using the Undo Command

The Undo command in the Edit menu will undo the last action you executed in the Graphic Editing window. For example, if you move a note and then change your mind, you can choose *Undo Move* from the Edit menu and the note will pop back to its original position. The Undo command is also useful when drawing or redrawing continuous data curves. If you modify a curve and are not satisfied with the results, simply choose Undo from the Edit menu or press command-Z and try again.

The View Filter

In the Graphic Editing window, the View Filter serves two useful functions. It allows you to control what types of data you can *see* and *edit* in the window. In essence, the View Filter acts like an edit filter: if a type of data, such as pitch bend, is visible in the window, it will be affected by editing commands. If the data type is *not* visible in the window, it cannot be edited.

The View Filter consists of a dialog box with each type of data listed next to a check box. If the check box is highlighted, the type of data will be visible. If the check box is not highlighted, the data type will not be visible.

To use the View Filter:

- 1. Choose Set View Filter from the Graphic Editing window mini-menu.**

The View Filter dialog box will appear.

- 2. Select the check box next to the data types you wish to see.**

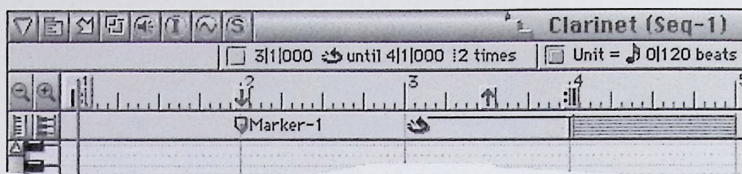
If you wish to see all data types, click the Set All button. If you option-click a check box, it will highlight and all other boxes will deselect. If you command-click a check box, it will deselect and all other boxes will highlight. If you press the clear button, all check boxes will deselect.

- 3. Click Okay to confirm your choice or click Cancel to cancel.**

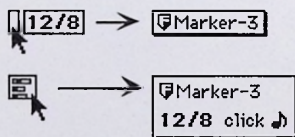
You can change the View Filter at any time.

The Marker Strip

The Marker Strip appears just below the Time Ruler. It displays markers, meter changes, key changes and loops. It is always visible and is not affected by vertical scrolling.



The Marker Strip shares the Time Ruler with the Note Grid, the Median Strip, and the Continuous Data Grid. Therefore, the location of items in the Marker Strip will correspond with MIDI data displayed below.



Markers, meter changes, and key changes often occur very close together or at the same location. In the first example to the left, the meter change is preceded by a marker, which appears as a bar just to its left. If you would like to see the entire marker, press it, and the marker will highlight and pop to the front. If the marker and meter change occur exactly at the same tick, they are displayed with a list icon, shown in the second example. If you would like to see the list, press the list icon, drag downwards and a pull-down menu will pop open.

Markers

In the Marker Strip, a marker appears as a pointer, followed by the marker's name. The pointer indicates the marker's exact location. If the marker is locked, a lock icon will appear between the pointer and the marker name.

Markers cannot be edited in the Marker Strip; instead, they can be edited in the Conductor track or the Markers window. Please refer to the chapter on the Markers window for more information about editing markers.

In the Conductor track, markers are displayed in the Median Strip. Please refer to the section later in this chapter called *Graphic Editing in the Conductor Track* for more information.

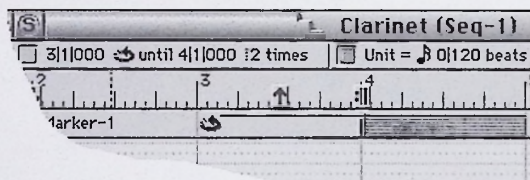
Meter and Key Changes

Loops

Meter and key changes appear in the Marker Strip in much the same way as they do in the event list window. (Tempo changes are not displayed in the Marker Strip.) Similarly, they can only be edited in the Conductor track. Please refer to the section later in this chapter called *Graphic Editing in the Conductor Track* for more information.

Loops appear in the Marker Strip as a loop icon followed by a line that ends in a bracket. The loop icon indicates the beginning of the loop; the line and bracket represent the duration and end of the loop.

Following the loop, the Marker Strip contains a greyed-out region that represents the time during which the loop plays. Just like italicized notes in the Event List display, MIDI data within the greyed-out region will not play back because data inside the loop plays instead. Data within the greyed-out region can, however, be edited normally.



When a loop is selected, the Marker Strip area inside the loop will highlight, indicating that the loop is selected. Numerical data about the loop will be displayed in the Event Information bar. When loops are nested inside one another, the outer-most loop appears above the loops nested inside it.

Working with Loops

To insert a Loop

Loops can be edited by dragging the loop icon in the Marker Strip with the mouse or by editing the numbers displayed in the Information Bar.

To insert a loop:

1. Press on the Insert button in the title bar of the Graphic Editing window and choose Loop from the menu.

The mouse pointer turns into a cross hair.

2. **Click at the desired start location in the Marker Strip, drag to the right to draw the desired length, and release the mouse at the end location.**

A loop will appear. Use the dotted hairlines in the Time Ruler to align the beginning and end of the loop while inserting it. Information about the loop will appear in the Information bar.

To Edit a Loop

To change the location of a loop:

1. **Click the loop icon in the Marker Strip and drag left or right to advance or delay the loop.**

The entire loop, from beginning to end, will move when you drag the loop icon in this fashion. You can align the start or end point of the loop by watching the hairlines provided in the ruler.

To change the length of a loop:

1. **Select the loop by clicking on its loop icon in the Marker Strip.**

The loop will highlight.

2. **Click the end bracket of the loop and drag left or right to shorten or lengthen the loop.**

Align the end bracket by watching the hairline provided in the ruler.

The Note Grid

Basics

The Note Grid is the region in the Graphic Editing window between the Marker Strip and the Median Strip. It is flanked by the Pitch Ruler on the left and a vertical scroll bar on the right.

The Note Grid functions like a standard graph. Time extends horizontally from left to right and pitch stands vertically. Thus, the higher the pitch of a note is, the higher it will appear on the grid. The later a note occurs, the farther to the right it will appear on the grid.

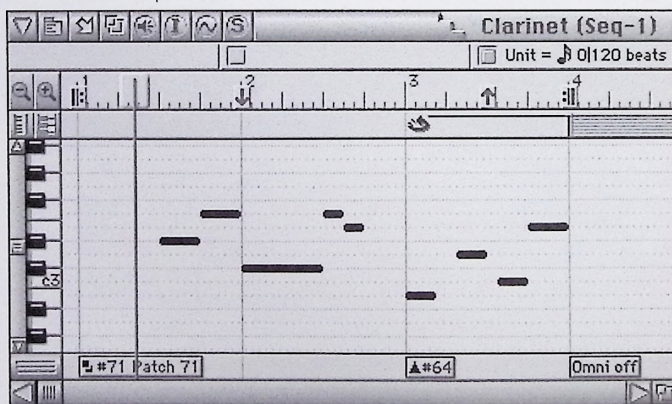
The time and pitch axes are measured with a Time Ruler above the grid and a Pitch Ruler to the left of the grid. The rulers indicate the exact location and pitch of notes. Grid hairlines extend from each ruler to aid you in determining a note's position.

Scrolling in the Note Grid

Because the size of the Graphic Editing window is restricted, the Note Grid usually displays only a portion of the track at one time. The horizontal scroll bar at the bottom of the window moves the Note Grid to the left and right. The vertical scroll bar just to the right of the Note Grid moves the pitch axis up and down over the entire MIDI note range. By scrolling, you can view any region of the track at any pitch range.

Controlling the Dimensions of the Note Grid

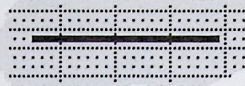
The size of the Note Grid is controlled by the Graphic Editing window grow box in the lower right hand corner of the window, and by the Median Strip just below the Note Grid. Drag the grow box to resize the entire window. Drag the Median Strip up or down with the move handles provided at either end to decrease or increase the size of the Note Grid and Continuous Data Grid respectively. For example, if you drag the Median Strip down as far as it will go, you will see just the Note Grid:



Displaying Notes

Only notes are displayed on the Note Grid, and they appear as horizontal bars. The vertical position of the bar indicates pitch. The left end of the bar indicates where the note begins, and the right end indicates where the note releases. The length of the bar represents the note's duration. All of these characteristics can be determined by the Time Ruler above the grid and the Pitch Ruler to the left.

When the Pitch Ruler is zoomed in, each bar tapers at the ends to distinguish it from adjacent notes. When the Pitch Ruler is zoomed out, notes become smaller and do not taper. Sometimes, adjacent notes of the same pitch will look like one long note. The example below shows two adjacent notes when the Pitch Ruler is zoomed out. When zoomed in, the notes are easily distinguished, as shown to the right:



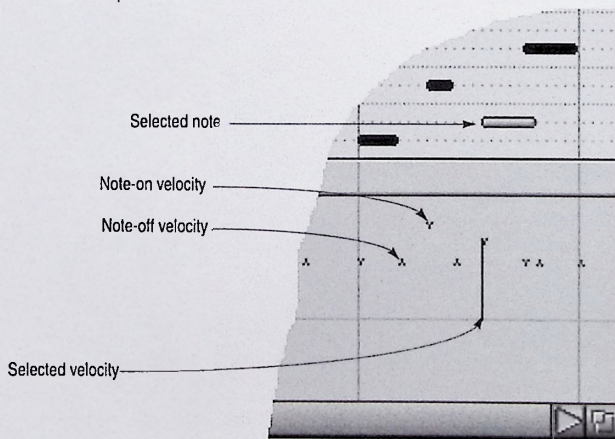
Two notes, zoomed out



The same notes, zoomed in

Displaying On and Off Velocities

The on and off velocities of notes are not displayed in the Note Grid. Instead, they are displayed in the Continuous Data Grid directly below the note. An on velocity appears as a small "v" directly below the beginning of the note bar, and an off velocity appears as a small "Λ" directly below the release. If a note is selected, its velocity icons will be selected with the note.



Controlling the Display of Notes with the View Filter

Displaying on-velocities in this manner allows you to edit them in the same ways as continuous data. For example, you can create a crescendo or decrescendo simply by editing on-velocities in the Continuous Data Grid. See *Editing Continuous Data* later in this chapter called for more information.

Off-velocities are displayed in the continuous data grid for reference only; they cannot be graphically edited. On-velocities can be fully edited.

The View Filter, found in the Graphic Window mini-menu, allows you to choose whether or not notes are displayed in the Note Grid. If you have MIDI data in a track, but you cannot see the notes in the Note Grid, check the View Filter and make sure that the *Notes* check box is selected.

The View Filter also controls whether on and off velocities will be displayed. For example, if the *On Velocities* check box is deselected in the View Filter, the "V" icons will not appear on the Continuous Data Grid.

The Pitch Ruler

The Pitch Ruler lies vertically to the left of the Note Grid and measures pitch. It resembles a standard piano keyboard. Because the entire ruler cannot fit in the window at once, a vertical scroll bar is provided to the right of the note grid to allow you to scroll up and down through the entire MIDI pitch range. Octaves are indicated on each C-natural key.

To help align notes to the ruler, hairlines extend to the right from each note, a heavier line for black keys and a lighter line for white keys.

To help align the mouse pointer with the Pitch Ruler, a moving dotted hairline inside the Pitch Ruler follows the current position of the mouse.

Listening to the Pitch Ruler

When the Audible Mode button (labelled with the speaker icon) is pressed in the title bar of the Graphic Editing window, the keys on the pitch ruler play their pitch over MIDI when you click on them. When you click on a Pitch Ruler key, a MIDI note with that pitch is transmitted from Performer to the MIDI channel(s) that the track is assigned to.



Zooming the Pitch Ruler



Lengthening the Pitch Ruler

Inserting Notes

Playback from a track's Pitch Ruler has the same requirements as regular playback: the track must be assigned to a MIDI channel and a synthesizer must be set up to receive MIDI on that channel. If you click on a Pitch Ruler key and don't hear anything, make sure that your MIDI connections are set up properly and that your synthesizer is ready to receive MIDI data. If MIDI data in the track plays back properly when you press the Play button in the Consolidated Controls panel, the Pitch Ruler keys will play back properly as well.

If you are having trouble getting the Pitch Ruler keys to play, refer to the *Getting Started* booklet that accompanies this reference guide.

The Pitch Ruler can be zoomed in or out with the Pitch Zoom icon, which provides four zoom settings. Zooming out reduces the size of the keys on the pitch ruler, allowing you to see more octaves at once. Zooming in enlarges the keys, allowing you to focus on a particular pitch range.

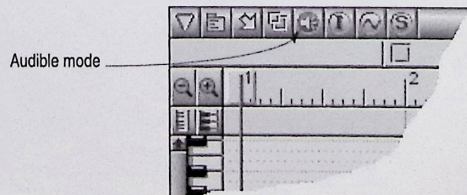
For more information about zooming the Note Grid with the Pitch Ruler, please refer to the section earlier in this chapter called *Zooming*.

The pitch ruler only displays as many keys as will fit in the window at the current zoom setting. If you wish to see more keys, resize the Graphic Editing window and drag the Median Strip down.

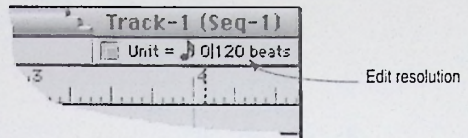
You can also view more keys at a time by zooming out the pitch ruler as described in the previous section.

To insert a note:

1. If you'd like to be able to hear the pitch as you insert the note, make sure Audible mode is turned on in the title bar.



2. If desired, set the edit resolution.



3. From the insert menu in the title bar, choose Note.
 4. Press on the grid at the desired location, and then drag up and down to specify the pitch and drag to the right to specify the duration.
- Keep dragging until you get the pitch and duration you want.
5. When you have got the pitch and duration you want, release the mouse to insert the note.

Note insertion always starts with the last duration you inserted.

If you want to insert multiple notes quickly, hold down the shift key when you first click on the grid each time. This preserves the note insertion cross-hair cursor rather than switching back to the arrow cursor.

Inserting a Note Using a MIDI Controller

To determine the pitch of a note by playing the note when you insert it:

1. Make sure that MIDI Edit is checked in the Graphic Editing Window mini-menu.

If it is not checked, choose it.

2. Press on the Insert button in the title bar of the Graphic Editing window,
3. Choose Note from the menu.

The menu will disappear and the pointer will turn into a cross hair.

Inserting a Chord Using a MIDI Controller

4. **Click at the desired time location on the Note Grid, drag to the right to draw the desired duration, and release the mouse.**

You do not need to be careful about pitch location, which is taken care of in the next step.

5. **With the inserted note still selected, press any key on your MIDI controller.**

The inserted note will pop to the pitch that you choose. The inserted note must still be selected from the previous step for this step to work. If you press the wrong note, try again. You can keep changing the note's pitch in this fashion as long as the note remains selected.

To insert a chord:

1. **Press the Insert button in the Graphic Editing window title bar.**
2. **Choose Note from the menu.**

The Cursor will turn into a cross-hair.

3. **If you would like to insert more than one chord, either hold down the shift key, or push down the caps lock key.**

This will keep Performer in insertion mode after you insert the chord.

4. **Play the chord you wish to insert on your MIDI controller and, while holding the chord, click where you want the chord to begin and drag from left to right to the appropriate duration.**

The vertical position of your click is not important; the notes are determined by what you play on your controller. Only the attack and release of the chord is affected by the cross-hair.

As long as you remain in insertion mode, you can enter chords in this fashion for as long as you like. You can even alternate between entering notes with the mouse only or the mouse with a MIDI controller.

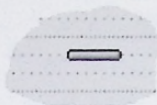
Selecting Notes

Selecting a Single Note

This section describes how to select notes on the Note Grid. To learn how to select an entire region by dragging in the Time Ruler, refer the section earlier in this chapter called *Selecting a Region Using the Time Ruler*.

To select a note on the Note Grid:

1. Click once on the note to select it.



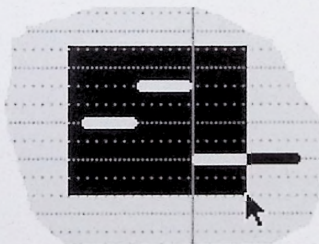
The note becomes highlighted to indicate that it is selected.

Selecting a Group of Notes

To select a group of events:

1. Drag out a selection box over the events to be selected.

A highlighted box indicates the selection area.



2. Release the mouse.

Only events whose attack occurs inside the selection box will select.



Selecting all Notes of a Single Pitch

You can quickly select all notes of a specific pitch in the note grid by double-clicking a key on the Pitch ruler. Shift-double-click multiple keys to select discontinuous pitches. Shift-double-clicking selects or deselects without deselecting other events.

This feature is extremely handy when working with drum tracks. For example, if you would like to select all snare drum notes in a track:

1. **Click the Audible Mode button.**
2. **Click the pitch keys on the Pitch Ruler to locate the key that corresponds to the snare drum.**
3. **Once you find the snare drum sound, double-click the key.**

All the snare drum notes will highlight in the track. You can then delete them, copy them, drag them up or down to a different note (sound), etc.

Editing Notes

Changing a Note's Pitch or Location

The pitch, duration, and location of notes can be modified on the Note Grid in much the same way as objects in a graphics program. Note velocities can be edited in the Continuous Data Grid.

To change a note's pitch or location:

1. **Click the note.**
2. **Drag the note to a different position and release the mouse.**

When you begin dragging, an outline of the note will appear in place of the mouse pointer. Dragging the note vertically changes its pitch. Dragging the note horizontally changes its time location. Duration is not affected when dragging the entire note. When you release the mouse, the note will pop to the new location.

To help position the note in time, hairlines appear in the Time Ruler that show the attack and release of the selected note. In addition, the Pitch Ruler key that corresponds to the note's current pitch highlights as you move.

If you hold down the shift key before you drag, the mouse will be constrained either vertically or horizontally, depending on which way you drag first. This allows you to change the note's pitch without changing its time location, for example.

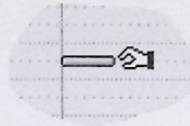
Changing a Note's Duration

Changing a Note's Pitch Using a MIDI Controller

Editing a Group of Notes

To change the duration of a note:

1. **Click the note once to select it.**
2. **Position the cursor near the right-hand tip of the note.**



3. **Drag left or right to shorten or lengthen the note.**

To change the pitch of a note with your MIDI controller:

1. **Make sure that MIDI Edit is checked in the Graphic Editing Window mini-menu.**

If it is not checked, choose it.

2. **Click the note once to select it.**

A handle appears at the end of the note to indicate that it is selected.

3. **Press any note on your MIDI controller.**

The selected note will change to the pitch you play. This can also be done with more than one note selected. This is a quick way to convert a group of different notes to the same pitch.

Editing a group of notes is similar to editing a single note.

1. **Select the notes that you wish to edit.**

To select them, drag out a selection box or shift-click each note.

Converting More Than One Note to the Same Pitch

Using Audible Mode



2. Click one of the notes and drag it to a new position.

All of the notes will move together. When you begin dragging, an outline of the notes will appear in place of the mouse pointer. Dragging notes vertically changes their pitch. Dragging notes horizontally changes their time location. When you release the mouse, the notes will pop to their new locations.

To help position the notes in time, hairlines appear in the Time Ruler to indicate the attack of the first selected note and the release of the last selected note. In addition, the Pitch Ruler key corresponding to the note you click highlights. If notes of more than one pitch are selected, the Pitch Ruler keys that correspond to the highest and lowest selected notes appear greyed.

To convert a group of selected notes to the same pitch:

1. Make sure that MIDI Edit is checked in the Graphic Editing Window mini-menu.

If it is not checked, choose it.

2. Select the notes.

You can select a group of notes by shift-clicking each one or by dragging out a selection box. A square handle will appear at the end of each note to indicate that it is highlighted.

3. Press any note on your MIDI controller.

The selected notes will change to the pitch you play.

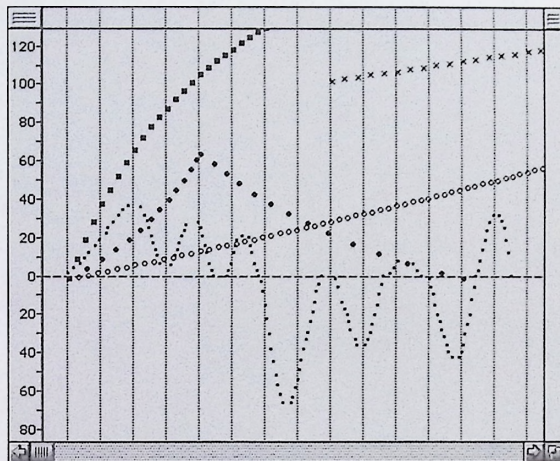
In the Graphic Editing window, Audible Mode functions similarly to the Event List Window: if the speaker icon is highlighted and you click a note, the note will play back over MIDI.

If you select a group of notes or other MIDI data and option-click the Audible Mode button, the selected data will play back as a phrase.

For more information about Audible Mode, see the section called *Audible Mode* in the *Event List Window* chapter.

The Continuous Data Grid

The Continuous Data Grid is the region at the bottom of the Graphic Editing window below the Median Strip and above the horizontal scroll bar. It is flanked by the Continuous Data Ruler on the left and an empty margin on the right.



Basics

The Continuous Data Grid displays MIDI controllers, pitch bend, mono and poly key pressure, and note-on/off velocities. The grid functions like a standard *X* and *Y* coordinate graph, in which time lies on the horizontal axis and value along the vertical axis. The higher the value of a continuous data event is, the higher it will appear on the grid. The later the event occurs, the farther to the right it will appear on the grid.

Location and value are measured with the Time Ruler and the Continuous Data Ruler respectively. Grid lines extend from the Time ruler to help in determining an event's position.

The Continuous Data Grid has no vertical scroll bar. Instead, the grid automatically compresses or expands to fit in the current space between the Median Strip and the bottom of the window. The grid can be stretched (or compressed) vertically by dragging the Median Strip up (or down). To make more room for both the Continuous Data Grid and Note Grid, simply enlarge the entire window with the grow box.

Viewing Continuous Data Types One at a Time

A continuous data event is displayed on the grid as a small icon, such as a square or a circle. Pitch bend data, aftertouch, velocities, and controllers each have a unique icon. The icons are defined in the Continuous Data Icons window, which can be opened from the Graphic Editing window mini-menu.

Eight different icons are available for the display of Controllers. Controllers can be assigned to icons in the Continuous Data Icons window. For more information, see the section later in this chapter called *The Continuous Data Icons Window*.

The expression *continuous data type* refers to a *kind* of continuous data. For example, pitch bend is one kind of continuous data. MIDI controllers between 0 and 63 are each considered a continuous data type.

Continuous data types can be viewed simultaneously in the Continuous Data Grid. Sometimes, however, you may wish to see only one type (or several) at a time. Performer offers several ways to temporarily isolate continuous data types for viewing and editing.

To view pitch bend data by itself, click on the Continuous Data Ruler. Doing so toggles the ruler among three displays, one which displays pitch bend data by itself. For more information about this feature, refer to the next section called *The Continuous Data Ruler*.

To view a controller data type by itself, click an event of that type and click the Quick-Filter check box that appears in the Information Bar next to the event's numerical data. Clicking the Quick-Filter box causes all other data types to temporarily disappear until you click it again. For more information, refer to the section later in this chapter called *Editing Continuous Data*.

The Quick-Filter is useful for *temporarily* isolating continuous data types. However, data types can also be filtered with the View Filter in the Graphic Editing window mini-menu. Data types that are selected in the View Filter will be displayed; ones that are not selected will not be displayed. To view all data types, click the *Set All* button in the View Filter.

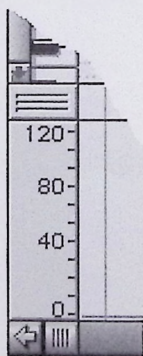
The Continuous Data Ruler

Like the Quick-Filter, the View Filter affects selecting and editing. For example, if note velocity data has been filtered from the display, it cannot be selected for editing. All *visible* data types *can* be selected for editing.

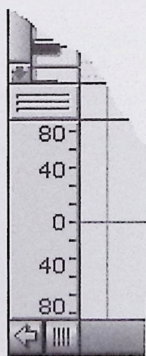
For information about editing continuous data, see the section later in this chapter called *Editing Continuous Data*.

All continuous MIDI data has a value range from 0 to 127 except pitch bend, which has a value range from -8192 to 8191. Because of these two separate scales, the Continuous Data Ruler provides three different scales:

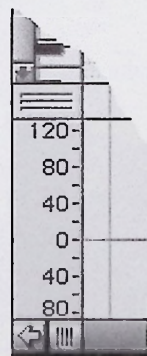
1. a **controller scale** from 0 to 127, whose origin rests at the bottom of the window:
2. a **pitch bend scale** from -8192 to 8191, whose origin appears in the middle of the window:
3. a **combination scale** from -80 to 127, which combines the above two scales and whose origin appears just below the middle of the window.



Controller scale



Pitch bend scale



Combination scale

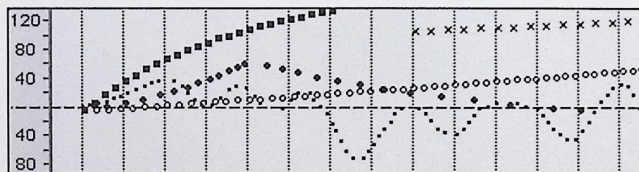
To switch from one scale to another, click in the ruler. Doing so toggles from the current scale to the next. Each scale displays data appropriate to that scale. The controller scale (0 to 127) displays controller data only. The pitch bend scale (-8192 to 8191) displays

Controlling the Length of the Continuous Data Ruler

pitch bend only. The combination scale (-80 to 127) displays controller data *and* pitch bend together. Note velocities, if selected in the View Filter, appear in the controller and combination scales. The pitch bend scale displays pitch bend even if it is deselected in the View Filter.

All three scales provide numbered marks in the ruler and an origin line extending to the right that indicates where zero is on the ruler.

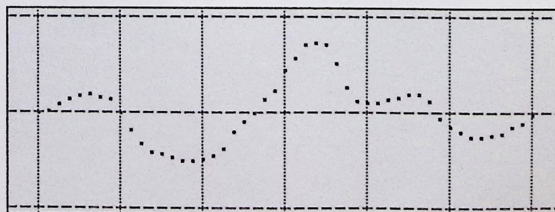
The entire Continuous Data Ruler is always visible. If you resize the grid using the Median Strip or the Graphic Editing window's grow box, the Continuous Data Ruler will compress or expand to fit in the available space. The data within the grid will also compress or expand to conform to the ruler.



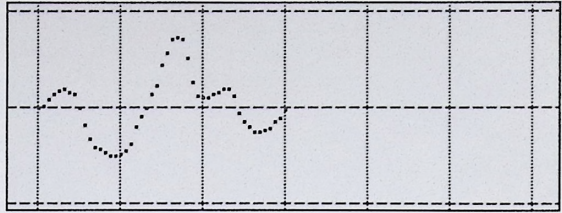
If you wish to enlarge the view of the Continuous Data Grid, resize the Graphic Editing window and drag up the Median Strip. If you move the Median Strip *all* the way up, the Continuous Data Grid will occupy the entire window.

Zooming the Continuous Data Grid

The Continuous Data Grid can be zoomed along the time (horizontal) axis. Time zooming has the visual effect of expanding or compressing a continuous data curve in the window. If you zoom in, the curve spreads out:



If you zoom out, the same curve compresses:



The data that comprises the curve does not change between these two views: only its appearance changes. Time zooming allows up to eight different settings. For more information about zooming the Time Ruler, refer to the section earlier in this chapter called *Zooming*.

Editing Continuous Data

The Continuous Data Grid displays more than one type of continuous data at a time. For example, the grid can display pitch bend, controller #7, and mono key pressure all at once. Each type is distinguished by the shape of its icon.

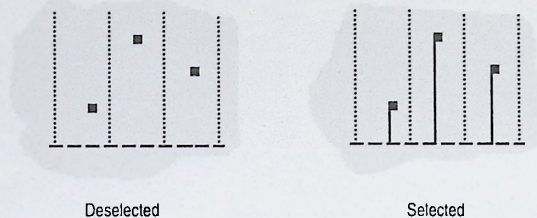
Because data types are displayed simultaneously, they can be selected and edited together. Sometimes, however, you may wish to edit only one type (or several) at a time. Performer provides two ways to isolate continuous data types for viewing and editing. For example, if the Continuous Data Grid currently displays the three types of data mentioned above, you can filter out pitch bend and key pressure to view controller #7 data by itself.

The most convenient way to filter data is with the Quick-Filter check box. To view controller number #7's only, click any controller #7 event to select it and click the Quick-Filter check box next to the event's numerical data in the Information Bar. All other data types will temporarily disappear, and you can then easily select controller #7's without inadvertently selecting other data types. To make other data types reappear, click the Quick-Filter check box again.

The regular View Filter, found in the mini-menu, also filters data types. In the View Filter dialog box, select the continuous data type(s) you wish to see and deselect all others. Only *visible* data can be selected for editing.

When a continuous data event is selected, a line extends from the icon to the origin line on the continuous data grid. Once events are selected, they can be edited.

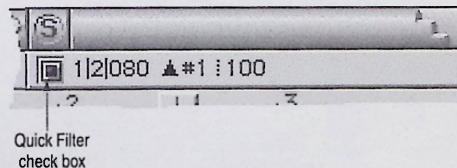
The diagram below shows three deselected controller events on the left. To the right the events are selected: a line extends to the origin line; selected events can be edited.



Events selected in this fashion can be edited with the following commands in the Edit menu: Cut, Copy, Paste, Erase, Merge, Splice, and Shift. To Snip or Repeat, you must select a region by dragging in the Time Ruler.

To view certain continuous data types and quickly filter the rest:

1. **Select an event of each data type that you want to see.**



Click the event, or drag a selection box over it. To select more than one data type, shift-click an event of each type.

2. **Click the Quick-Filter check box that appears next to the numerical data in the Information Bar.**

All data types will disappear except those that you selected. To make all data types reappear, click the Quick-Filter check box again. You can toggle freely between filtered and unfiltered mode.

Quick-Filtering Data Types

Selecting a Single Continuous Data Event

Selecting a Group of Continuous Data Events

To select an event:

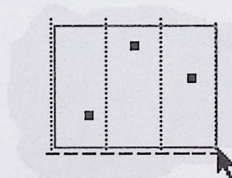
1. **Click the event.**

The event will become selected. The selected event displays a vertical line extending from its icon to the origin line.

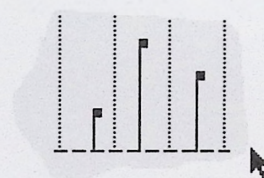
To select a group of continuous data events:

1. **Drag a selection box over the events and release the mouse.**

When you release, any events inside the dotted selection box will be selected. All other highlighted events will deselect. If other events are selected before you drag and you want them to remain selected, hold down the shift key before you drag out the selection box.



Drag out a selection box...



...and release.

To select *all* events of a single data type:

1. **Double-click an event of that type.**

All events of that type will become selected. All events of other types will deselect. If events of other types are selected beforehand and you want them to remain selected, shift-double-click and the other events will remain selected.

To deselect *all* events of a single data type:

1. **Shift-double-click a selected event of that type.**

All events of that type will deselect.

Inserting a Single Continuous Data Event

Editing a Single Continuous Data Event

Editing the Value of an Event Using a MIDI Controller

To insert an event on the Continuous Data Grid:

1. **Press the Insert button in the title bar of the Graphic Editing window,**
2. **Choose the type of event you wish to insert from the menu.**

The mouse pointer will turn into a cross hair. For some types of data, an additional box may appear requesting further information.

3. **Click the cross hair once at the desired time location and value.**

The event will appear where you click, and the mouse will switch back to an arrow. If you wish to insert multiple events, press the shift key before you click and the cursor will remain a cross hair.

To change the value or location of a single continuous data event:

1. **Click the event and drag it to a different position or value.**

Drag vertically to change its value. Drag horizontally to change its location. Press the shift key after you click to constrain the mouse vertically or horizontally. For exact positioning, refer to the Pointer Coordinates Box and the rulers.

To change the value of an event with your MIDI controller:

1. **Make sure that MIDI Edit is checked in the Graphic Editing Window mini-menu.**

If it is not checked, choose it.

2. **Click the event to select it.**
3. **Transmit a corresponding event from your MIDI controller.**

For example, if you have selected pitch bend event, move the pitch bend wheel on your controller and the event will change to the new value you set with the wheel.

4. **When you have entered the value you wish, press the Return key or the mouse to confirm the new value.**

Working With Continuous Data Curves

Selecting a Continuous Data Curve

A continuous data curve is a group of many individual events. Events that form a curve can be edited together in much the same way as a single event. The only difference is that more than one event is selected.

To select a continuous data curve:

- 1. Filter other data types, if necessary.**

Click an event in the curve you wish to select and click the Quick-Filter check box in the Information Bar. Filtering is only necessary if the region that the curve occupies contains other data types that you do not want to select.

- 2. Drag a selection box over the curve and release the mouse.**

The portion of the curve inside the selection box will become selected. All other events will deselect. If you want other events to remain selected, press the shift key while you drag out the selection box.

To select all events of a continuous data type:

- 1. Double-click an event of the desired type.**

To *deselect* all, shift-double-click a selected event.

Shift-double-clicking selects or deselects all without affecting the status of other types.

To insert a curve of continuous data:

- 1. Press the Insert button in the title bar of the Graphic Editing window.**

- 2. Choose the type of event you wish to insert from the menu.**

The mouse pointer will turn into a cross hair. For some types of data, an additional box may appear requesting further information.

Inserting a Continuous Data Curve

Reshaping a Continuous Data Curve

3. **Click on the grid where you want the curve to begin and drag the desired shape of the curve over the region.**

Events will appear at regular intervals as you drag the mouse. The events will be spaced according to the current edit resolution. The value of events is determined by the vertical position of the mouse. If you wish to insert multiple curves, press the shift key before you drag; the cross hair will remain, indicating that you are still in Insert mode.

OR

4. **Option-drag from the start point to the end point of the curve.**

A straight line will appear with handles on either end and a handle at its midpoint. This line represents a curve to which continuous data events will be fitted. You can adjust the location and shape of the line by dragging its handles. The end-point handles can be dragged both vertically and horizontally to position the start and end point of the curve. The middle handle sets the curvature.

5. **Once you have adjusted the line as you wish, click anywhere else on the screen or press the Return key.**

The line will disappear and events creating a curve with the same shape as the line will appear.

To reshape a continuous data curve:

1. **Select the curve you wish to reshape.**

You can either double-click an event of that type to select all or drag out a selection box over a portion of the curve. If the curve intermingles with other visible data types, use the Quick-Filter before selecting to avoid inadvertently selecting events of other types.

2. **Click the Reshape button in the title bar of the Graphic Editing window or choose Reshape from the Graphic Editing window mini-menu.**

In both cases, the mouse pointer will turn into a cross hair.

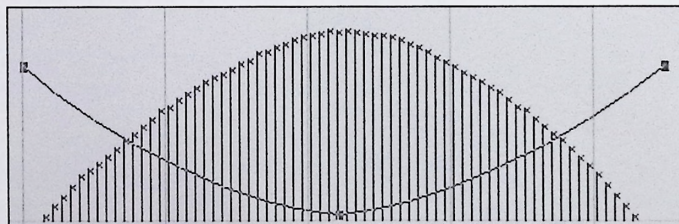
3. Drag above or below the selected events to change their values to the position of the mouse.

Each event will snap to the position of the mouse as the mouse passes over it. The location of events will not change. If you like, you can deselect the Quick-Filter before dragging to view other data types while dragging. If you wish to remain in Reshape mode, press the shift key before you drag; the cross hair will remain when you finish dragging, indicating that you are still in Reshape mode.

OR

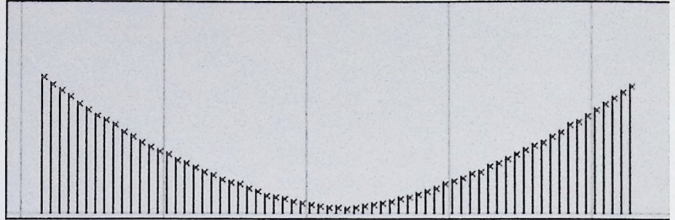
4. Option-drag along the selected region of the curve.

A straight line will appear with handles on either end and a handle at its midpoint. This line represents a curve to which continuous data events will be fitted. You can adjust the location and shape of the line by dragging its handles. The end-point handles can be dragged both vertically and horizontally to position the start and end point of the curve. The middle handle can be dragged to set the curvature.



5. Once you have adjusted the line as you wish, click anywhere else on the screen or press the Return key.

The line will disappear and selected events above or below the line will adjust their values to match the shape of the line.



Offsetting or Scaling a Continuous Data Curve

You can *offset* a continuous data curve by dragging it in any direction. Offsetting modifies events in the curve by a constant amount: dragging up or down changes events' values; dragging left or right changes their location. For example, dragging a curve up by a value of 30 will add that amount to all events in the curve.

You can *scale* a continuous data curve by command-dragging it in any direction. Scaling modifies events in the curve proportionally: dragging up or down scales *values* proportionally; dragging left or right scales *time*. For example, when a bell-shaped curve is scaled up, the start and end points of the curve remain at zero, and the slopes become steeper as the top of the curve rises. Scaling is a useful way to exaggerate or diminish a curve's musical effect without changing its fundamental nature. For example, you can scale an existing crescendo so that it swells in the same manner but ends at a softer volume.

To offset or scale a continuous data curve:

1. Select the curve you wish to modify.

You can either double-click an event of that type to select all or drag a selection box over a portion of the curve.

Cancelling Lengthy Editing Operations

Summary of Continuous Data Editing Features

Selecting

2. **Click (to offset) or command-click (to scale) a selected event and drag in the direction you wish.**

Press the shift key before dragging if you wish to constrain motion horizontally or vertically. As usual, horizontal position (location) is constrained by the current edit resolution.

A wristwatch icon may appear when Performer executes a continuous data edit operation. To cancel an operation in progress, press command-period (command-.). The operation will abort. Data modification that occurred before cancelling will not be undone unless you choose Undo from the Edit menu.

This section summarizes features available when working with the Continuous Data Grid.

Select a *single event* by clicking it.

Select *several events* by dragging a selection box over them.

Select *all events* of a single data type by double-clicking an event of that type.

Select *all events of several types* by shift-double-clicking an event of each type.

Select *all continuous data* by choosing Select All from the Edit menu or pressing command-A. All other MIDI events in the track will become selected as well, including notes and data in the Median Strip.

Deselecting

Deselect a *single event* by shift-clicking it.

Deselect *all events* of a single data type by shift-double-clicking a *selected* event.

Deselect *all continuous data* by clicking in an empty area on the Continuous Data Grid.

Quick-Filtering

Quickly isolate a data type by clicking an event of that type and then clicking the Quick-Filter check box in the Information Bar. Isolate more than one type by shift-clicking an event of each type before clicking the Quick-Filter check box. To unfilter, deselect the Quick-Filter check box.

Offsetting

Offset the location or value of selected events by dragging horizontally or vertically.

Offset the location of a *copy* of all selected events by pressing the option key and dragging horizontally.

Scaling

Scale the time or value of selected events by pressing the command key and dragging horizontally or vertically.

Constraining

Constrain the movement of the mouse vertically or horizontally while scaling or offsetting by pressing the shift key after clicking and before dragging.

Inserting and Reshaping

Click the Insert and Reshape buttons (or choose Insert or Reshape from the mini-menu) to change the mouse cursor to a cross hair.

Insert events or *Reshape* existing selected events in any shape you wish by dragging the cross hair.

Insert or *Reshape* events against an adjustable curve outline by pressing the option key before dragging the cross hair. A straight line with moveable handles will appear to which events will be fitted when you click elsewhere on the grid.

Remain in Insert or Reshape mode by pressing the shift key before dragging the cross hair.

The Continuous Data Icons Window

The Continuous Data Icons window serves as a legend for the icons you see in the Continuous Data Grid. In addition, it allows you to assign controller data types to eight unique icons to help differentiate between them on the grid.

To open the Continuous Data Icons window, choose Cont. Data Icons from the Graphic Editing window mini-menu. The window remains until you click its close box and serves as a handy reference when working with continuous data.

Assigning Icons to Controllers

The Continuous Data Icons window offers eight different icons to represent controllers. Because more than eight types of controllers exist, the most commonly used controllers have been assigned to icons by default. However, you can change which controller an icon represents. For example, a square can represent controller #7 or controller #38. All controllers that have not been assigned to one of the first seven icons are automatically assigned to the last "u"-shaped icon. The icons for pitch bend, velocity, and key pressure cannot be changed and are displayed for reference.

To assign a controller to an icon:

1. Open the Continuous Data Icons window.

Select Cont. Data Icons from the Graphic Editing window mini-menu.

2. Click in the box to the right of the icon of your choice.

The box will highlight.

3. Type in the controller number that you wish to assign to that icon.

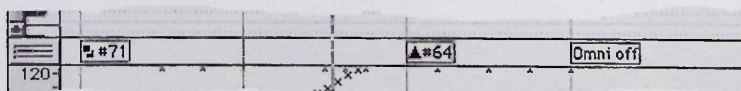
The number you type must be between 0 and 63. Controllers 64 through 127 are switch controllers and will appear in the Median Strip.

4. Press the Return key or click anywhere to confirm your choice.

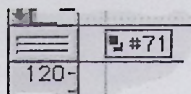
The Continuous Data Grid will reflect any changes you have made.

The Median Strip

The Median Strip separates the Note Grid from the Continuous Data Grid. It contains only the following discrete MIDI events: patch changes, mode changes, switch controllers like #64 (sustain pedal), tune requests, song changes, and system exclusive events. Notes and continuous data do not appear in the Median Strip.



Moving the Median Strip



Working with Discrete MIDI Events in The Median Strip

Inserting an Event in the Median Strip

The Median Strip serves as the border between the Note Grid and the Continuous Data Grid. It can be dragged up and down by grabbing the handles at either end. Moving the Median Strip resizes the Note Grid and the Continuous Data Grid proportionally. For example, if you drag the Median Strip down as far as it will go, you will see only the Note Grid. If you drag the Median Strip all the way up, you will see only the Continuous Data Grid.

The Median Strip is a convenient way to quickly adjust the size of one grid or the other to suit your immediate needs.

Events in the Median Strip do not have durations. Each event is therefore displayed as a single item inside a small box. Patch changes, system exclusive events, and controllers are displayed with their event list icon; mode changes are displayed as text, such as "Poly" or "Omni on". An event may be pop-edited in the Information bar in the same fashion as in the event list window. Location is determined by the Main Time Ruler. To indicate time location, the vertical grid lines from the Main Ruler extend through the Median Strip.

Discrete MIDI events that are not continuous data, such as patch changes, mode changes, switch controllers like #64 (sustain pedal), and system exclusive events, appear in the Median Strip. To insert such an event:

- 1. Press the Insert button in the title bar of the Graphic Editing window.**
- 2. Choose the type of event you wish to insert from the menu.**

The mouse pointer will turn into a cross hair. For system exclusive events, an additional box will appear requesting further information.

- 3. Click once at the desired time location in the Median Strip.**

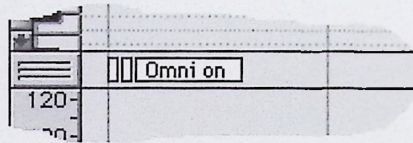
The event will appear where you clicked.

Editing an Event in the Median Strip

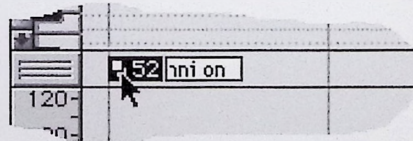
Events in the Median Strip can be pop-edited in the Information bar. For example, to select such an event, click it and the event will highlight. Click the event in the Information bar and a pop-up box will appear that you can type in. When system exclusive events are pop-edited in this manner, a dialog box will appear.

Dragging an event in the Median Strip left or right will change its location.

If two or more events occur at the same time, they will overlap in the Median Strip. Overlapping events are displayed as shown in the example below:



In this example, the Omni on message occurs near two other events. The other events are indicated by boxes preceding the Omni on box. To see the other events, click their box. To select the second event displayed in the example above, click the second rectangle. The event will pop to the front and become highlighted:



If two or more events occur at the exact same location, a list icon appears. If you press on it and drag downwards, a small pull-down menu shows all events at that location. Events in the pull-down menu can be selected and then edited. For example, if you select the third item in the menu, the list icon becomes highlighted. If you then drag the list icon left or right, you will only drag the third item that you had selected. To select more than one item in the menu, shift click to select each item.

Graphic Editing in the Conductor Track

The Conductor Track Median Strip

Inserting a Meter/Key Change or Marker

The Conductor Track Graphic Editing window is similar to a regular track but has several differences. It does not have a Note Grid because the Conductor Track cannot contain notes. In addition, the Median Strip is wider and fixed at the top of the window just below the Time Ruler. Finally, the Conductor Track has a Tempo Change Grid similar to the Continuous Data Grid that displays tempo changes only.

Meter changes, key changes, and markers are displayed in the Median Strip.

The Median Strip in the Conductor Track functions much like the Median Strip in a regular track. Each meter change, key change, and marker is displayed as a single item. The Conductor Track Median Strip is wide enough to accommodate all three kinds of events without overlapping them.

Editing in the Conductor Track Median Strip works the same as editing MIDI data in a regular track's median strip: click an item to make it appear in the Information bar and click in the Information bar to pop-edit its value(s); drag the item left or right to change its location.

Note that only *unlocked* markers can be edited in the Conductor Track window; to unlock a marker, do so in the Markers window.

To insert a meter change, key change, or marker:

- 1. Press the Insert button in the Conductor Track title bar,**
- 2. Choose the item you wish to enter.**
The pointer will turn into a cross hair.
- 3. Click in the median strip at the location you desire.**

The event will appear at the location.

Editing the Location of a Meter Change, Key Change, or Marker

To change the location of an item in the median strip:

1. **Click the item you wish to move and drag left to advance it or drag right to delay it.**

The event will move to the new location when you release the mouse.

The Tempo Change Grid

Tempo changes are displayed and edited on the Tempo Change grid in the same fashion as continuous data. Each tempo change event is displayed on the grid as a small icon. When the tempo change event is selected, a line extends from its icon to the origin at the bottom of the grid. A tempo change ruler on the left measures events on the grid. Tempo changes can be selected and edited in the same way as an active continuous data type. For more information, see *Editing Continuous Data* earlier in this chapter.

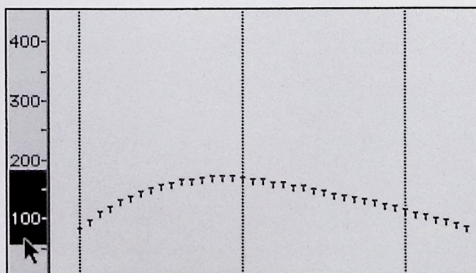
Zooming the Tempo Ruler

The Tempo ruler in the Conductor track can be zoomed in for more precise tempo editing. Clicking the Tempo ruler toggles quickly between your custom zoom scale and the normal scale.

To zoom the Tempo ruler:

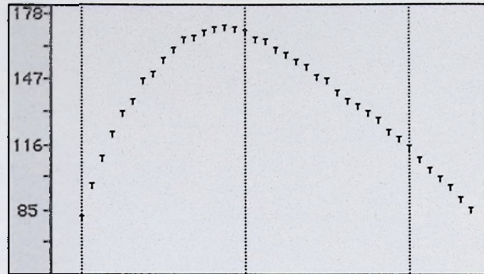
1. **Highlight the range of values you wish to zoom to by dragging in the Tempo ruler.**

The Tempo ruler will zoom in on the range that you select.



2. Click the Tempo ruler to toggle between your custom zoom scale and the normal scale.

At the zoomed in scale, dragging tempos up or down can be done to a higher degree of resolution.



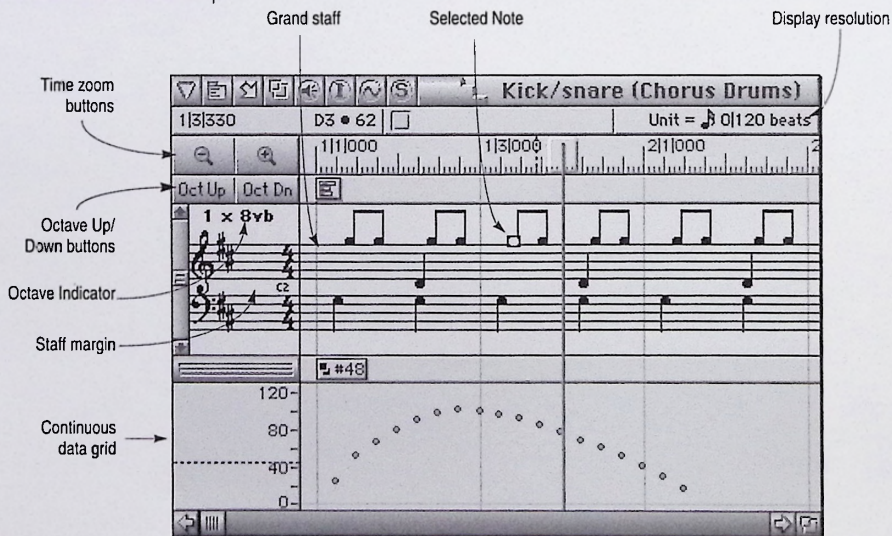
- The resolution at which you can insert and edit tempo events is one screen pixel (72 dots per inch). Therefore, you have a higher degree of resolution when you zoom in.

Chapter 22 *The Notation Editing Window*

Performer offers four windows in which to edit data in a track: the Event List, Graphic Editing, Notation Editing, and QuickScribe notation. To open the Notation Editing window, hold down the command and option keys and double-click the track name. Or choose Notation Editing from the Event List or Graphic Editing window mini-menus. You can also option-click the Notation button in the main control panel.

The Notation Editing window provides a scrolling window of a single track, very similar to the Graphic Editing window. This chapter covers features unique to the Notation Editing window. To display several tracks, use QuickScribe notation as described in chapter 23, “QuickScribe Notation” (page 345).

Quick Reference



Display Resolution: Determines the shortest duration that will be used to display note data on the Grand Staff. Actual attack and release times are not affected by Display Resolution.

Selected Note: Click once to select the note. While the note is selected, its information will appear in the Information Box above. Shift-click or drag a selection box to select more than one. Drag the note up or down to change pitch; drag left or right to change time location.

Grand Staff: Displays notes on standard treble and bass clef staves. By default, middle C between the staves is C3. Click the Octave Up/Down buttons to change middle C to a different octave to place notes in higher or lower octaves on the staff.

Time Zoom Buttons: Contract or expand the Time Ruler, Grand Staff, and Continuous Data Grid to display more or less measures at a time. The left button zooms out (more measures), and the right button zooms in closer (less measures).

Octave Up/Down Buttons: Transpose the display of notes on the Grand Staff by octaves. When untransposed, middle C on the Grand Staff is C3. For example, in a bass track, low notes are displayed many ledger lines below the staff. To distinguish the pitches, click the Octave Down button; middle C will become C2 and the bass notes will be displayed an octave higher on the grand staff. The octave indicator in the Staff Margin indicates the degree of transposition.

Octave Indicator: Indicates the octave being displayed on the Grand Staff.

Staff Margin: A non-scrolling region of the Grand Staff that displays clefs, key signature, and meter.

Continuous Data Grid: Displays continuous data in the same manner as the Graphic Editing window.

Set View Filter: Calls up a dialog box in which you specify types of events to be visible in the Notation Editing window. The View Filter applies to all tracks and affects the Graphic Editing, Notation Editing, and Event List windows.

Goto Counter: Automatically scrolls the graphic display to the time currently displayed in the Counter. The counter location will appear at the left-most position in the window.

Goto: Automatically scrolls the graphic display to a time you specify, which will appear at the left-most position in the window.

ReInsert: Inserts an event of the same type that you last inserted. This is the same as the Insert command but you are not prompted for the type of event. This command can also be invoked by option-clicking the Insert (I) button in the Notation Editing window title bar.

Reshape: Changes the mouse pointer to a cross hair that reshapes selected continuous data curves when you drag over them in the Continuous Data Grid. This command can also be invoked by clicking the Reshape button in the title bar.

Legend: Produces a window that shows the icon representing each type of MIDI event.

Set Rulers: Allows you to configure the Time Ruler in any combination of Performer's three time formats: measures | beats | ticks, SMPTE time, and real time. The main ruler is displayed lowest and determines the time format for editing.

Cont. Data Icons: Opens the Continuous Data Icons window, which displays icons for each type of continuous data. This window also allows you to reassign controller icons.

Set Ptr. Coords...(Set Pointer Coordinates): Allows you to choose what time and pitch formats will be displayed in the Pointer Coordinates Box.

MIDI Edit: Allows data in the graphic editing window to be edited from a MIDI controller.

Switches are Cont. Data: Causes all controllers, including switch controllers #64 and above, to be displayed and edited as continuous controllers. This is useful for MIDI devices, such as MIDI-controlled lighting consoles, that use all MIDI controllers as continuous controllers.

Basics

Display Resolution

Selections use Edit Resolution: Causes the cursor to snap to the edit resolution when dragging to make selections in the note grid, time ruler, and continuous data grid.

Event List: Opens the track's Event List window.

Graphic Editing: Opens the track's Graphic Editing window.

QuickScribe Notation: Opens the QuickScribe Notation window.

Measures/Real time/Frames: These checkable entries control which time formats are displayed in the Information Bar and Event List.

The Notation Window is similar to the Graphic Editing window. It has a Time Ruler, a Markers Strip, a Median Strip, and a Continuous Data Grid, features that are identical to those found in the Graphic Editing window. Instead of a pitch ruler and note grid, however, the Notation Editing window displays notes on a grand staff in standard music notation. Octave Up/Down buttons are provided to center any octave on the grand staff, and a non-scrolling staff margin on the left displays clefs, key signature, and meter.

For further information about the Time Ruler, Markers Strip, Median Strip, and Continuous Data grid, refer to chapter 21, "The Graphic Editing Window" (page 281) in the Reference Manual.

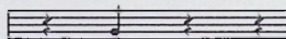
Features that are unique to the Notation Editing window are discussed below.

Internally, Performer accurately records the attack and release times of notes at a resolution of 480 ticks per quarter note. For example, a quarter note that you attempted to play on beat two of measure three, 3|2|000, may have actually occurred a split second after the beat at 3|2|073, which is 73 ticks after the downbeat:

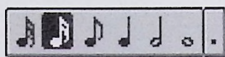
3 2 073	♪G3	164	164	1 000
---------	-----	-----	-----	-------

Even though the note is a little late, it may sound like it is right on the beat because of the sound used, the nature of the music, etc.

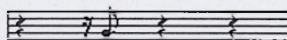
Instead, Performer internally sets up an evenly spaced grid of note durations, finds the nearest grid location, and displays the note as if it began at the grid location. For example, at a quarter-note grid resolution, the above note at 3|21073 is displayed on the nearest downbeat at 3|21000 (as a much more recognizable quarter note!)



Even though the note actually occurs after the downbeat, it gets displayed on the downbeat, which is the nearest grid location.



The Display Resolution box allows you to choose at which grid resolution notes will be displayed. If the note above is displayed with a sixteenth note display resolution, which sets up a grid every 120 ticks, the note will be notated as a sixteenth rest followed by a dotted eighth note because its attack is closer to 3|21120 than it is to 3|21000:

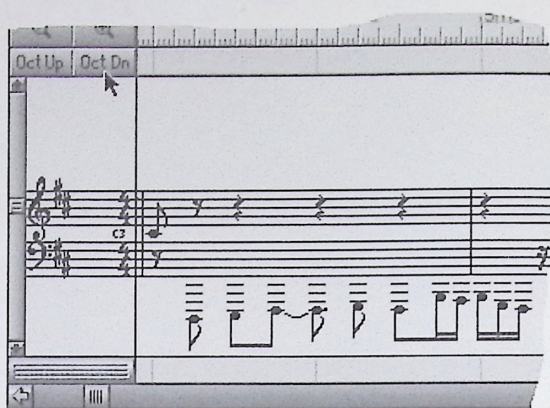


As you can see, the Display Resolution box determines the shortest duration that will be used to display notes and rests in the track. In general, a shorter duration produces a more accurate (but maybe not as conventional) notational display of the notes in the track.

Display Resolution does not affect the actual location or playback of the notes. Don't worry about affecting the notes in the track when using the Display Resolution: it only affects their display. If you would like to make the note data more rhythmically accurate, use the Quantize or Smart Quantize commands.

Octave Up/Down Buttons

The Octave Up and Octave Down buttons change the octave of middle C, the pitch directly between the treble and bass staves. By default, middle C is MIDI note number 60, or C3. If the notes in the track fall well below middle C, they will be displayed on ledger lines below the grand staff. To raise the display of the notes and make them more legible, click the Octave Down button:



The result is that the entire Grand Staff display is transposed, as indicated above the treble clef, and the notes are displayed within the staff. Only the display gets transposed; the actual notes maintain their original pitches.



Basics

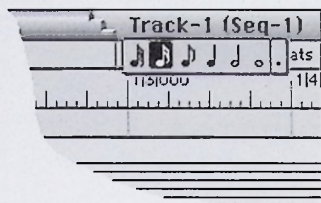
Inserting Notes

The following sections describe basic procedures in the Notation Editing window.

To insert a note on the grand staff:

1. Choose a Display Resolution.

To do so, click the Display Resolution note and choose the desired duration. The Display resolution affects the resolution at which you can insert the note.



2. Click the Insert button in the title bar or choose Insert from the mini-menu.

In both cases, the Insert menu will appear.

3. Choose Note from the menu.

The menu will disappear and the mouse pointer will turn into a cross hair.

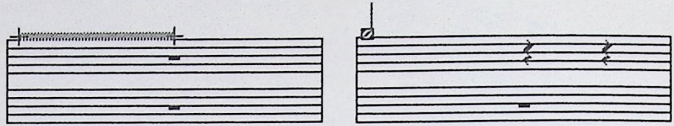
4. (Optional) Press the Shift key.

This is only necessary if you wish to insert more than one note.

5. Click at the desired pitch and location on the Grand Staff, drag to the right to draw the desired duration, and release the mouse.

The note's attack will begin at the nearest grid location. The duration is shown as a grey bar extending to the right. As you drag to the right, the duration of the note increases in increments of the

display resolution. For example, to enter a half-note with 16th note resolution, drag eight increments to the right as shown below.



To insert a note, drag to the right...

...and a note will be inserted.

If you press the shift key to insert multiple notes, simply click on the desired pitch to insert another note of the same duration. To insert a note with a different duration, click and drag a new duration. You will remain in insert mode as long as you hold down the Shift key.

Inserting a Chord Using a MIDI Controller

To insert a chord:

1. **Choose "Note" from the Insert button pop-up menu in the title bar.**

The Cursor will turn into a cross-hair.

2. **If you would like to insert more than one chord, either hold down the shift key, or push down the caps lock key.**

This will keep Performer in insertion mode after you insert the chord.

3. **Play the chord you wish to insert on your MIDI controller and, while holding the chord, click where you want the chord to begin and drag from left to right to the appropriate duration.**

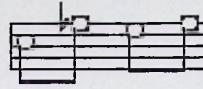
The vertical position of your click is not important; the notes are determined by what you play on your controller. Only the attack and release of the chord is affect by the cross-hair.

As long as you remain in insertion mode, you can enter chords in this fashion for as long as you like. You can even alternate between entering notes with the mouse only or the mouse with a MIDI controller.

Selecting Notes for Editing

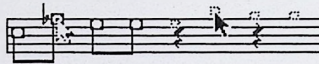
Selecting notes on the Grand Staff works the same way as selecting notes in the Graphic Editing window. To select a single note for editing, just click the note. The notehead will invert to indicate that

the note is selected. To select several notes, shift-click each one. Or, drag a selection box over them. Shift-click to select non-contiguous notes. To select all notes in the track, double-click any note.

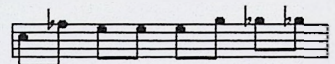


Dragging Notes

To change the location or the pitch of a note, simply drag the note to the desired pitch or location. This can also be done with more than one note selected. As usual, option-dragging will produce a copy of the originally selected notes, which can be used to quickly generate repeated phrases or chords.



To copy notes, option-drag...



...and a copy of the notes will result.

If a note is displayed as several tied notes, you must click the first of the tied notes.

Editing Durations

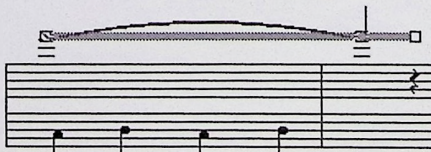
To change the duration of a note:

1. Command-click the note.

If the note consists of several tied notes, you must click the first of the tied notes. A grey bar will appear to indicate the current duration of the note with respect to the Time Ruler.



To change a duration, command-click the note...



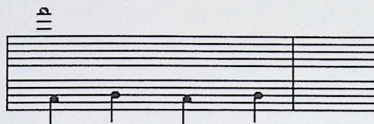
...and drag the handle of the grey bar left or right.

Scrolling During Playback

Zooming Shortcuts

2. Drag the handle of the grey bar to the left to shorten the note or to the right to lengthen it.

The grey bar will show you the change in duration.



To change the duration of more than one note, select them first and command-drag any one of them.

When changing a duration in the Notation Editing window, the new duration maintains any differences between its actual length and its displayed length. For example, if a quarter note ends 17 ticks after beat 2, and you lengthen it by one beat to beat 3, the release will still be 17 ticks after beat 3.

The *Auto-Scroll* command in the Basics menu can make the Notation Editing window scroll during playback. In addition, the window will automatically open to the current playback location of the sequence. Please refer to the Auto-Scrolling section in the *Playback* chapter for more information.

Here are some zooming shortcuts:

Do this:

Command-drag in the Time Ruler

Option-click the zoom out button

Option-click the zoom in button

To zoom as follows:

To fill the window with the region you select

To zoom all the way out

To zoom all the way in

Chapter 23 ***QuickScribe Notation***

This chapter explains how to use Performer's QuickScribe™ notation window. The notation window allows you to view and edit any number of tracks as standard music notation.

Performer interprets unquantized MIDI data, notating it in a readable fashion without permanently quantizing the data, so your original performance is always preserved. Music is displayed and edited on a page on the screen exactly as it will print on your Macintosh-compatible printer.

Notes can be inserted with the mouse, Macintosh keyboard, or via MIDI step entry. You can also transpose and edit using all of Performer's powerful commands in the Edit and Region menus.

The QuickScribe window provides intuitive text entry for preparing title pages, headers, footers, and page numbers. It lets you adjust system margins, staff spacing, measure spacing, and other aspects of formatting.

QuickScribe window basics

Performer provides one QuickScribe notation window per sequence (and you can have an unlimited number of sequences in a Performer file). The QuickScribe window can display any combination of tracks in the sequence, and you can easily change what is displayed. Page formatting is preserved, even if you decide to change what is displayed in the window. The QuickScribe window is ideal for quickly printing scores and parts. Best of all, you can choose to display any region, from a single measure to the entire sequence. In either case, Performer quickly formats the music.

Unlike the Notation Editing window, the QuickScribe notation window uses engraver spacing so that the notation looks more natural for printing. The contents of the QuickScribe notation window can be printed at any time. This chapter explains all about preparing the appearance of the score. For information about printing it, see chapter 43, "Printing" (page 665) in the Reference Manual.

Notation window Quick Reference

Below is a brief overview of the QuickScribe window.

Tool palette: lets you insert notes, triplets, and text.

Status strip: displays current cursor coordinates and information about the currently selected note.

The screenshot shows the QuickScribe notation window titled "Score (What Else Can I Do)". The window displays a musical score for "What Else Can I Do?" by Joe Geiger. The score is for Vocals, Piano, and Bass. The Vocals part is in treble clef, and the Piano and Bass parts are in grand staff. The score is divided into three systems. The first system shows the beginning of the piece with a key signature of one sharp (F#) and a time signature of 4/4. The second system shows the middle of the piece with various chords and notes. The third system shows the end of the piece with a final chord. A selection box highlights a portion of the piano part in the second system, and an insertion cursor is shown on the piano staff. The tool palette on the left contains icons for various musical notation elements. The status strip at the top displays the current cursor coordinates and information about the currently selected note. The page number box at the bottom left shows "Page 1".

Insertion cursor for Macintosh keyboard entry and MIDI step recording.

Notes being selected

Page number box: click in this box and type in a number to go the desired page

Choosing what tracks to display

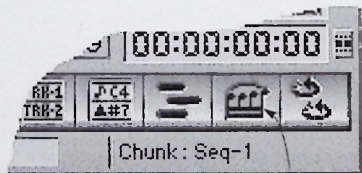
The QuickScribe notation window can display any region of time in any combination of tracks. To choose what to display in the QuickScribe notation window:

1. **Select one or more tracks in the Tracks window, and set the time region in the Tracks window Edit bar (to the nearest measure).**

Actually, you can use any of the many selection methods that are available in Performer, which are fully explained in chapter 25, "Selecting Regions" (page 387) in the Reference Manual. For your convenience, several common selection methods are suggested on the following page. If nothing is currently selected, Performer displays the entire contents of the sequence (i.e., the currently play-enabled sequence in the Chunks window).

2. **Click the QuickScribe notation window button in the Consolidated Control panel or choose QuickScribe from the Windows menu.**

Alternately, you can choose the QuickScribe Notation mini-menu command from any edit window.



QuickScribe notation window button

3. **The Notation window appears.**
4. **To make adjustments to the formatting, use the Score Options, Tracks options, and other mini-menu commands.**

In particular, you may want to change the way the music is spaced, which has a large impact on the efficiency of editing, as well as how good the music looks. For details, see "Measure spacing" on page 356.

5. **To add a title, use the Text tool in the palette.**

For more information, see "Working with text" on page 367.

The selection methods below are interchangeable, and not every method is covered here. For more information, see chapter 25, "Selecting Regions" (page 387) in the Reference Manual.

To display this:	Select this:
A few notes or measures in a track	Drag over them in the Event List, Graphic Editing or Notation Editing window.
Several measures in a single track	Drag over the measures in the Tracks overview. Or, click the track name to highlight it and type in the start and end time of the region in the Edit bar.
One or more measures in several tracks	Drag over the region in the Tracks overview. Be sure to highlight a track segment region only for the tracks you want to include. Or you can highlight the track names and set the region with the Edit bar start and end times. When you select more than one track using either method, the resulting staves are placed together in the same staff system.
An entire track	Double-click the word "Edit" in the Tracks window Edit Bar to select the entire length of the sequence and then click the track name to highlight it. Or, open an event editing window for the track and choose Select All from the Edit menu.
All tracks for the entire sequence	Double-click the word "Edit" in the Tracks window Edit Bar to select the entire sequence and choose Select All from the Edit menu to highlight all the track names. Or, as a shortcut, don't select anything.

- ☛ The Remember Times command in the Basics menu is a time-saving tool for selecting with the Edit bar. See "Remember Times" on page 275 of the Reference Manual.

Changing what is displayed

You don't need to quantize tracks to get good-looking notation

To change what tracks are displayed in the QuickScribe notation window, or to change the region of time:

1. Close the QuickScribe window.

Click its close button at the far left of the title bar.

2. Select the tracks and time region you wish to display.

3. Click the QuickScribe notation window button in the Consolidated Control panel or choose QuickScribe from the Windows menu.

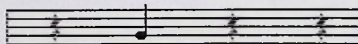
Performer does an admirable job of notating music, even though the music may not be quantized. Performer accurately records the attack and release times of notes at a resolution of 480 ticks per quarter note. For example, a note that you attempted to play on beat two of measure three, 3|2|000, may have actually occurred a split second after the beat at 3|2|073, which is 73 ticks after the downbeat:

3|2|073 ♪G3 164 164 1|000

Even though the note is a little late, it may sound like it is right on the beat because of the sound used, the tempo, and so on.

If Performer tried to take into account the 73 ticks when displaying the note in standard music notation, the result would be many 64th and 128th rests followed by lots of tied 64th and 128th notes—certainly not a recognizable quarter note!

Instead, Performer internally sets up an evenly spaced grid of note durations, finds the nearest grid location, and displays the note as if it began at the grid location. For example, the above note at 3|2|073 is displayed on the nearest downbeat at 3|2|000 (as a much more recognizable quarter note!)



Even though the note actually occurs slightly after the downbeat in the track, it gets displayed on the downbeat, which is the nearest grid location. As a result, you get the best of both worlds: your original performance of the music is preserved, and Performer makes the notation display look readable.

Displaying triplets and tuplets

The scrolling playback wiper

In addition to being able to properly display unquantized data, Performer automatically detects triplets and tuplets and displays them with the appropriate bracket and note spacing. In some cases, the placement of the notes in the tuplet may not be accurate enough for Performer to properly detect the tuplet. If you'd like to see the tuplet properly displayed, try quantizing the data with the tuplet option in the Quantize command. Try experimenting with Strength settings less than 100%, as the tuplet does not need to be fully quantized for Performer to recognize it.

A playback wiper is provided in the QuickScribe window to indicate the current playback location. This wiper can be dragged as well to change Performer's current playback location in the main counter. You can drag it left or right; you can also drag it up and down to jump from system to system.

Double-clicking anywhere on a staff to make the playback wiper jump immediately to that location. To turn off the wiper, uncheck it in the Auto Scroll command in the Basics menu.

The screenshot displays the QuickScribe Notation software interface. At the top, a menu bar includes options like File, Edit, View, and Score. Below the menu bar, a status bar shows the current score name "Score (Nore)" and the current measure "92 | 1360". The main workspace shows a musical score with three staves. The top staff is labeled "Nore." and contains a complex melodic line with a triplet of eighth notes marked with a bracket and the number "3". The middle staff is labeled "bass" and contains a bass line. The bottom staff is also labeled "bass" and contains a bass line. A vertical playback wiper is positioned at measure 92, indicating the current playback location. The wiper is a vertical line with a small horizontal bar at the top and a small triangle at the bottom. The score is written in a standard musical notation style with a key signature of one flat and a time signature of 4/4.

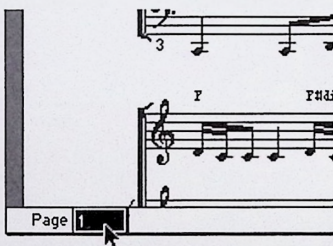
Getting around in the QuickScribe window

Use the commands in the QuickScribe notation window mini-menu to scroll through each page and go to the first or last page.

The mini-menu commands have the following keyboard shortcuts:

Mini-menu command:	Keyboard shortcut:
Next page	n
Previous page	p
First page	f
Last page	l

You can also jump to a particular page by using the page number box at the bottom of the window.

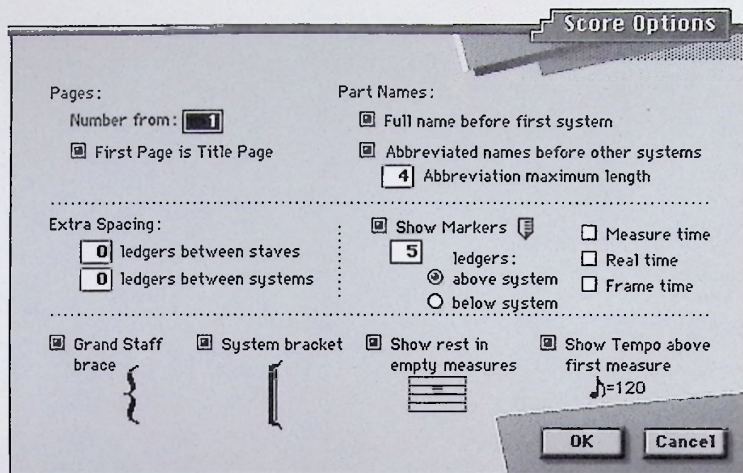


Pop-edit the page number display to go to any page.

To scroll up and down by one windowful (instead of an entire page), use option-page up and option-page down.

Setting the Score Options

Choose Score Options from the QuickScribe window mini-menu to open the Score Options dialog box:



All print option settings are saved with the file, and they can be included in your New file template.

Starting page number

This option allows you to enter the starting page number for the piece. Its default value is page 1.

Creating a title page

The “First page is title page” option allows the first page of music to be formatted differently from the rest of the body pages. Its system margins can be adjusted separately from other pages to allow for a title, subtitle, composer, and other text. Text can be inserted on the title page without having it be displayed on other pages.

Full part names/Abbreviated part names

Two options are provided for displaying staff names, which appear between left margin and the left edge of the staff. In both cases, the staff name is derived from the track name. Check the first option, called “Show Full Part Names before first System”, to display the full

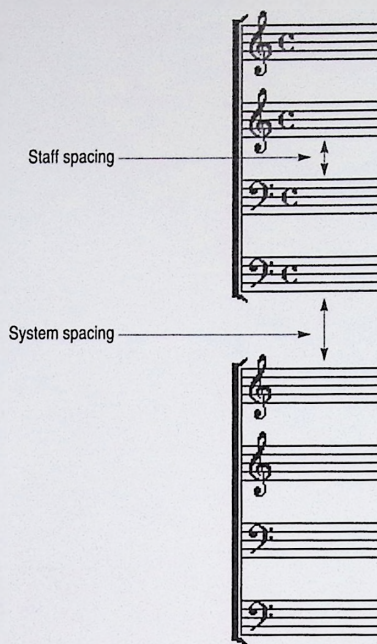
track name to the left of the first staff. Check the second option, called "Show abbreviated part names before other systems", if you would like an abbreviated name to appear next to each staff after the first one. The abbreviation is the first four letters of the staff name. If you don't want staff names, uncheck both options.

The *Abbreviation maximum length* option lets you choose the maximum length of abbreviated staff names.

To set the font, style, size, etc. of all staff names, click any staff name and choose the desired text settings from the Text menu. The settings you choose will affect all staff names and abbreviations.

Making more space between staves and staff systems

In addition to the space created above and below individual staves by their ledger line settings, you can make more space between staves and staff systems globally with the "Extra spacing" options. When you are printing a single track, use either option to increase the amount of space between the staves. If you are printing several tracks at the same time, they are grouped together into a staff system. Use the staff spacing option to increase space within the system; use the system spacing option to increase space between systems.



Markers

Markers can be displayed in the score at their location in the sequence. The marker text can appear above or below the staff, and you can control the distance from the staff by typing in a number of ledger lines in the box provided.

You can also choose to show the exact location of markers along with their name in any combination of Performer's three time formats. Just check the box next to the time format you wish.

To set the font, style, size, etc. of all markers, click any marker name and choose the desired text settings from the Text menu. The settings you choose will affect all markers.

System Bracket/Grand Staff Brace options

These two options let you choose whether to show a system bracket and grand staff braces.

Show rests in empty measures

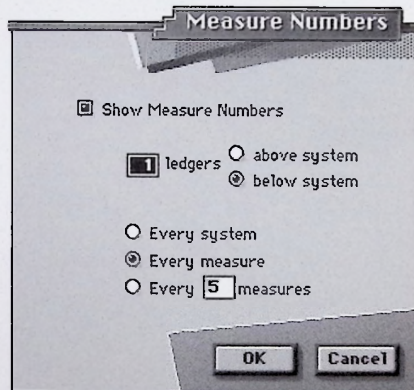
You may choose whether or not to show a whole rest in empty measures (measures with no note data in them).

Show tempo marking above first measure

Performer takes the tempo for the metronome marking from the tempo setting in the first measure displayed in the score. The tempo number is taken from the current settings in the metronome panel. For example, if the tempo control is set to the tempo slider, the current tempo slider setting is used. If tempo control is set to the Conductor track, the current tempo setting in the Conductor track is used.

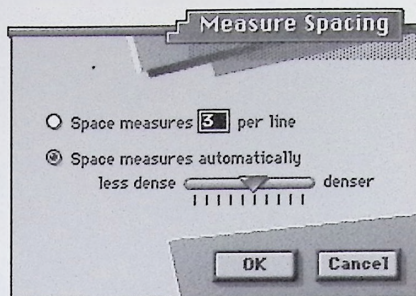
Measure numbers

The Measure numbers mini-menu command, shown below, sets the frequency and position of measure numbers in the score.



Measure spacing

The measure spacing mini-menu command lets you determine the number of measures per line or the overall spacing of notes.



Space measures ___ per line

This option lets you choose a certain number of measures per line, such as 4 or 5. You can type in the desired number. With this option, each bar is the same size no matter what notes are in the measures.

Performer can format pages much faster when measure spacing is fixed. As a result, fixed measure spacing is preferable over natural spacing if you plan to do a lot of cutting and pasting in the QuickScribe notation window because pages need to be reformatted every time you cut or paste data. On the other hand, if measures have lots of notes in them, use automatic spacing for best results.

Space measures automatically

This option lets Performer decide how many measures to put on each line, depending on how many notes are in them. You can tighten or expand the overall spacing of measures by adjusting the slider. Its range depends on the music: don't hesitate to experiment with its full range.

In many cases (depending on the music itself), automatic spacing produces the best-looking results. It can, however, make cut and paste operations slow because these operations require page reformatting, and page reformatting takes longer with automatic spacing. In addition, you'll often need to manually repaginate the score after cutting and pasting to properly format the music. If you

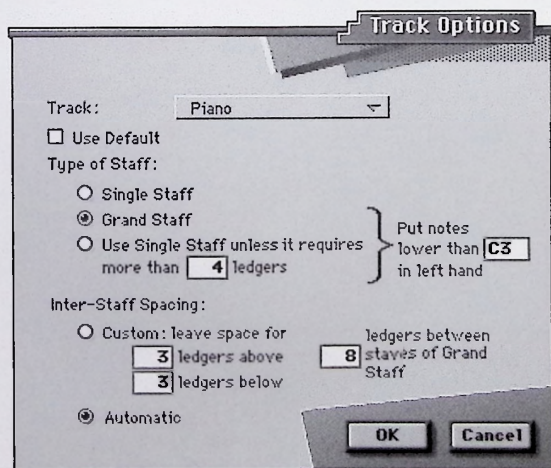
The effect measure spacing has on scrolling

plan to use the QuickScribe notation window for cut and paste editing, you'll find it to be much faster to use fixed measure spacing (discussed in the previous section).

Another thing you may notice when using automatic measure spacing is that a progress window may appear when you are scrolling around in the file. This happens when Performer has not yet calculated the pagination for all of the pages. Once the pagination has been calculated, scrolling from page to page is virtually instantaneous and you will no longer see the "Preparing to display page" progress window. If you make changes to your music that change the pagination, Performer will need to recalculate the page breaks again. If you would like to avoid this process entirely, and you would always like to be able to jump around instantaneously, use fixed measure spacing.

Track options

When displaying a track in the QuickScribe notation window, the Track options mini-menu command lets you specify how you want it to be displayed, such as whether to display the track on a single staff or a grand staff.



Track pop-up menu

Choose each track one at a time from this pop-up menu and, below, give it the settings you want. Each track can have its own settings, and the settings are remembered. You can change them at any time. The "Default" item in this pop-up menu has its own settings, too; they are applied to any track for which you have checked the *Use Default* option (see below).

Use Default

This check box causes the track to use the default settings. To change the default settings, choose *Default* from the Track pop-up menu at the top of the dialog box.

Type of staff

The *Single staff* option causes the track to be displayed on its own staff, regardless of what notes are in the track. When using a single staff, Performer automatically chooses either a bass clef or treble clef in an effort to place most of the notes inside the staff and to avoid lots of ledger lines.

The *grand staff* option causes each track to be displayed on a grand staff, regardless of the notes in the track. To set the split point between the staves, see the "Put notes lower than ___ in left hand" section below.

Put notes lower than ___ in left hand

When a track is displayed on a grand staff, this option lets you specify what notes will be displayed on the treble staff and what notes will be displayed on the bass staff. For example, traditionally, notes are split at middle C (C3). If you would like to follow this convention, leave the value set to C3. The Split pitch itself always gets included in top staff.

Use single staff unless it requires more than ___ ledgers

This option causes Performer to use a grand staff for the track if notes exist more than the specified number of ledger lines above or below a single staff. Use the ledger line option to control when a grand staff will be used instead of a single staff. Raise the number if you want to avoid using the grand staff very often.

Controlling page size

Adjusting system margins

Setting the score length

Setting the cursor coordinates

Repaginating

Inter-staff spacing

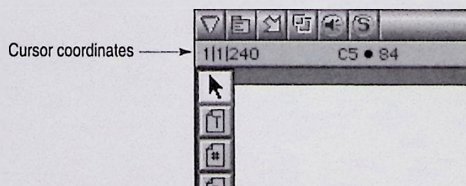
These options give you control over the amount of space above and below the staff. This spacing is specific to the one track you are making settings for. To change the spacing of all staves, see “Making more space between staves and staff systems” on page 353.

The size of the page in the QuickScribe notation window is controlled by the Page Setup command in the File menu. Custom page sizes are not supported.

System margins can be adjusted graphically by choosing the Show System margins mini-menu command in the QuickScribe notation window. Doing so causes system margins to appear on each page. The adjustments you make on any page will automatically be reflected on all other pages, except for the title page if there is one. If the “First page is title page” option is checked under the Score options mini-menu command, the title page margins can be adjusted separately from the rest of the pages to allow for title text. In this case, you can adjust the system margins of the other pages by scrolling to any page besides the title page.

The *Set Score Length* mini-menu command lets you show or hide measures at the end of the score by increasing or decreasing the total number of measures shown. Choose the command and enter the desired number of measures.

The Set Pointer Coordinates mini-menu command lets you set the display for the cursor coordinates shown in the status bar at the top of the QuickScribe notation window. Choose the desired time formats and pitch representation.



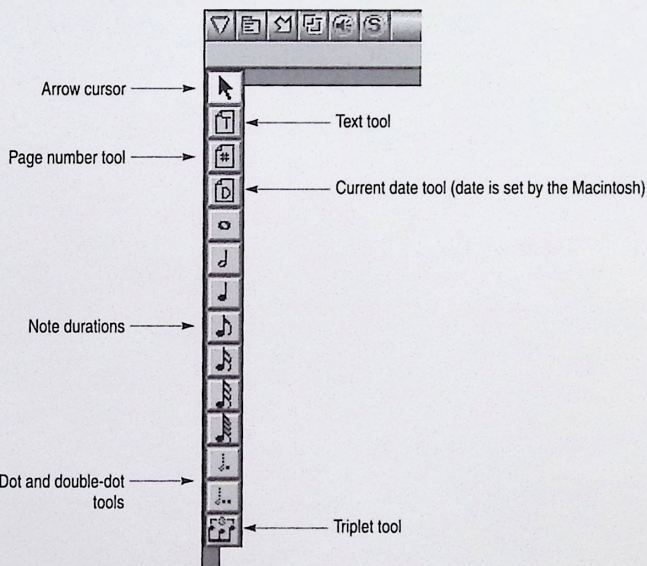
The Repaginate mini-menu command completely reformats the music on each page to achieve the most appropriate-looking layout of the measures. If you have made any changes to the music that require it

to be re-spaced or reformatted in any way on the page, the reformatting takes place when you choose this command (or close and then reopen the window).

Repaginate is especially useful after you copy and paste sections of music to restore appropriate measure spacing. If you plan to do a lot of cutting and pasting in the QuickScribe notation window, you may want to try using the fixed measure spacing option instead of natural spacing. Cutting and pasting can be much faster with fixed spacing. When you are done editing, you can return to using natural spacing.

The tool palette

The QuickScribe window tool palette allows you to insert notes, text, and tuplets. The Tools in this palette are explained at length in the rest of this chapter.



Working with notes

The QuickScribe notation window allows you to do basic sequencing tasks, including inserting, step-recording, transposing, and editing notes. The following sections describe what you can do in this window.

In the QuickScribe notation window, you can insert notes with:

- The mouse
- The Macintosh keyboard
- A MIDI keyboard

All three methods involve using the tool palette.

Rests are handled automatically by Performer's transcription algorithms. You do not need to enter them.

Rests are automatic

Inserting notes with the mouse

Insert notes and other symbols with the mouse as follows:

To insert this:	Do this:
A note	Click the desired note duration in the tool palette. Press anywhere in the measure where you want to insert the note. With the mouse still held down, drag to the desired pitch and location. Watch the cursor coordinates to help determine the beat location.
A note with an accidental	Same as above.
A dotted note	Click both the desired note duration and the dot in the palette. Then insert the same as above.
A chord	Insert the first note as described above. Click directly above or below the first note to add more notes to the chord.

A triplet	Click a note duration in the tool palette and click the triplet tool. Both are now selected. Insert each note in the triplet as described above.
To add a dot to a note	Click the dot tool and then click on the notehead you want to add it to.
To change the duration of a note	Click the desired duration in the palette and click the note.
To change several notes to the same duration	Select the notes with the arrow cursor. Command-click the desired duration or dot in the tool palette. Note: to scale durations (to double or halve them, for example) use the Scale Time command in the Region menu.
To change the location or pitch of one or more existing notes	Click the arrow cursor and then drag the note as desired. To drag multiple notes, select them before dragging.

Inserting notes with the Macintosh keyboard

To insert notes and other symbols with the Macintosh keyboard:

- 1. Click the arrow cursor tool in the palette.**
- 2. Click on the staff at the desired pitch and location for the symbol.**

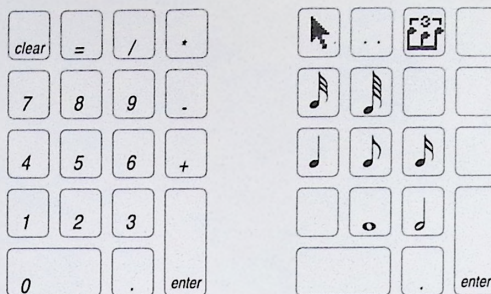
A blinking insertion cursor appears on the staff.

3. Once you have a blinking insertion cursor on the staff, refer to the following table:

To do this:	Do this:
To move the cursor	Use the arrow keys.
To determine the exact beat location and pitch of the insertion cursor	Use the cursor coordinates display in the status bar at the top of the window.
To select a duration	Use the open bracket ([) and closed bracket (]) keys to choose the next highest and lowest duration. Or use the extended keypad (see "Selecting durations with the extended keypad" on page 364). Or click the desired duration in the palette.
To insert a note	Press return.
To insert a note with an accidental	Press the + or - key on the extended keypad.
To insert the first note of a chord	Press the enter key. (Enter inserts the note without advancing the insertion cursor.)
To insert the second, third, fourth, etc. note in a chord	Press the enter key.
To insert a tuplet	Press the t key to turn on the tuplet tool, and use the bracket keys as described above to select any note duration. Press t again to toggle off the tuplet tool.
To delete a note or chord	Position the insertion cursor to the right of the note and press the delete (backspace) key.

Selecting durations with the extended keypad

The following keys can be used on the Macintosh extended keypad to select durations in the QuickScribe tool palette. These are the same duration keys used for the Step Record command in the Basics menu.



The QuickScribe duration selection keys on the Macintosh extended keypad.

Using the keyboard when the QuickScribe window is active

When the QuickScribe window is active (the front-most window), several keys on the Macintosh keyboard change their function to features that are specific to the QuickScribe window.

For example, the up and down arrow keys, which normally change the currently record-enabled track in the Tracks window (unless you programmed them for something else in the Remote Controls window), move the note insertion cursor up and down instead.

To temporarily suspend the QuickScribe key bindings and return to the normal bindings (in the Remote Controls window), hold down the shift key, or press caps lock. If you use caps lock, the shift key temporarily switches back to the QuickScribe key bindings.

Hearing notes while inserting them with the mouse

To hear notes played back on a MIDI device as you insert them, click the Audible mode button in the title bar of the QuickScribe notation window. Notes are played on the instrument that the staff (track) is currently assigned to in the Tracks window.

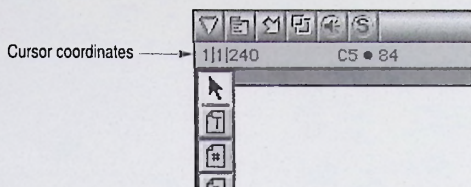
Step Recording notes with a MIDI controller

To insert notes with a MIDI controller:

1. Click the arrow cursor tool in the palette.

2. Click on the staff at the location where you would like to begin entering notes.

A blinking insertion cursor appears on the staff. Use the cursor coordinates to determine the exact location in the measure. If necessary, use the left and right arrow keys to move the cursor.



3. Select a note duration.

There are several ways to select a duration: 1) click the desired note duration in the tool palette, 2) press the open bracket ([) and closed bracket (]) keys on the Macintosh keyboard repeatedly, or 3) use the extended keypad as described in "Selecting durations with the extended keypad" on page 364. The currently selected duration is displayed in the tool palette.

4. Play the desired note or chord on your MIDI controller.

Notes appear when you release the keys, so be careful not to slur notes together. It's best to play in a staccato fashion to avoid accidentally inserting two notes when you only want to enter one. If you would like to hold one note while inserting others, just keep holding it down while inserting the other notes.

5. Play in as many notes and chords as you'd like.

Change durations as needed. Step Recording uses many of the same keyboard actions as Macintosh keyboard entry, so you may want to review the section "Inserting notes with the Macintosh keyboard" on page 362.

Getting the arrow cursor temporarily

While working with the tools in the palette, you may want to temporarily restore the arrow cursor for selecting or some other purpose. To do so, press the option key. While you hold it down, the cursor turns into an arrow. When you release the option key, the cursor switches back to whatever it was.

Selecting notes for editing

Below is a summary of how to select notes for editing in the QuickScribe notation window. Notes are selected with the arrow cursor.

To select this:

A single note

Several notes that are not next to one another

The notes in several measures

A region of notes

Do this:

Click the item once.

Shift-click each item.

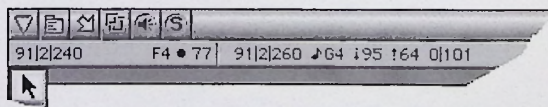
Drag a selection box over the measures.

Drag a selection box over them.

☛ If a note is displayed as several tied notes, you can click any notehead to select the entire note.



When a single note is selected, its information appears in the info bar. This information can be edited as usual.



Cutting, copying & pasting notes

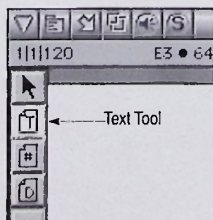
Once notes are selected as described in the previous section, they can be cut, copied, and pasted using the commands in the Edit menu. To paste notes you have either cut or copied, click the staff with the arrow cursor on the location at which you would like to paste the material. Watch the cursor coordinates box (see "Notation window

Using Region menu commands

Changing note durations

Working with text

Inserting text



Quick Reference" on page 346) to specify the exact beat location at which you will paste. You can copy and paste between other editing windows as well.

- ✎ Cutting and pasting can be slow if you are using natural measure spacing. You can use fixed measure spacing to speed things up. See "Measure spacing" on page 356 for more information.

After cutting and pasting, you can reformat the pages using the Repaginate mini-menu command to clean up the display.

Similar to the Edit menu commands mentioned above, Any Region menu command can be applied to notes you have selected. This includes quantizing, transposing, and any other command from the Region menu.

To change a note duration, click the desired duration from the tool palette and click on the note you wish to change. To change several notes at once, select them and then command-click the desired duration in the tool palette.

The QuickScribe window Tool palette has several text items that let you enter titles and other text on the page, including page numbers and metronome markings.

Text is handled in a similar fashion to standard Macintosh graphics programs. Text is placed on the page inside text boxes, which can be cut, copied, pasted, and otherwise edited. A text box is a resizable, transparent box in which you can type and edit text. If you have worked with MacDraw, SuperPaint, or similar graphics software, you are already familiar with how to use text boxes in Performer.

To insert text:

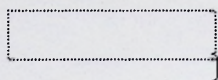
1. Scroll to the page on which you'd like to insert the text.

If you are inserting title page text, scroll to the title page. If you'd like the text to appear on body pages, scroll to any body page.

2. Click the Text tool in the Tool palette.

Making titles, headers, and footers

3. Drag out a text box on the page.



1. Choose the desired text attributes from the Text menu.

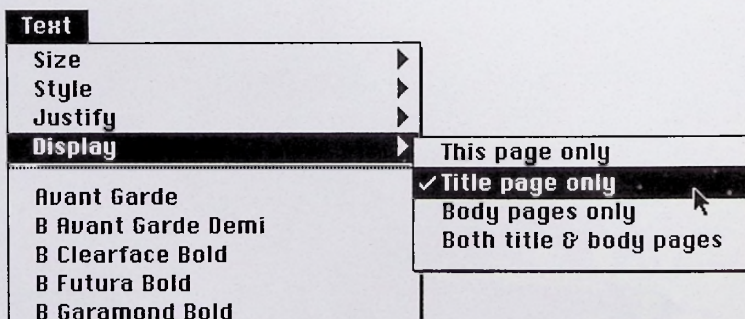
Choose the desired font, point size, style, justification, and display properties from the Text menu. For details about the *Display* text attribute, see “Making titles, headers, and footers” on page 368.

2. Type the desired text.

Composed by

3. Click anywhere outside the text box to complete the text entry.

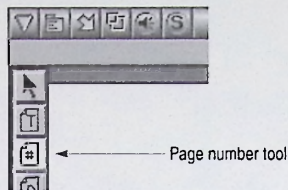
Titles, headers, and footers are inserted in the manner described in the previous section. Just choose the appropriate *Display* attribute in the Text menu as shown below.



If the *Title page only* and *Body pages only* menu items are greyed out, check the *First page is title page* option in the Score options command located in the notation view mini-menu. For more information about this option, see “Creating a title page” on page 352.

Making page numbers

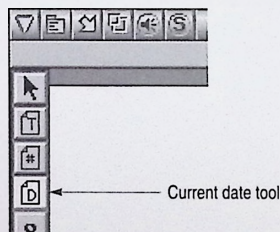
Page numbers are inserted using the page number tool in the tool palette.



Using this tool, insert them in the same manner as described in "Inserting text" on page 367. The page number automatically appears in the text box. Be sure to choose the appropriate Display attribute (*Body pages only* or *Both title & body pages*). See "Making titles, headers, and footers" on page 368 for more information.

Displaying the current date

The current date can be inserted using the Date Tool in the Tool palette.



Using this tool, insert the date in the same manner as described in "Inserting text" on page 367. The current date (as specified by your Macintosh) automatically appears in the text box. Be sure to choose the appropriate Display attribute (*Body pages only* or *Both title & body pages*).

Selecting text

To select an entire block of text, click it once. Handles appear to indicate that it is selected.



Typing and editing text inside a text box

Pasting text into Performer from other programs

To select individual words within a text box:

1. **Double-click the text box to edit it.**
2. **Select the desired text by dragging over it**

Play very fast

Once text is selected, it can be cut, copied, or deleted. You can also change the font, style, and other attributes of the text.

To edit text, double-click it to get an insertion cursor inside the text box. Once you have an insertion cursor inside the text box, use the following actions to edit the text:

To do this:

Move the text cursor within the text box

Delete a character

Select a word

Select several words or sentences

Change the font, point size or style of some text in the text box

Justify the text to the left margin, to the right margin or to the center

Finish inserting or editing the text

Cancel text editing

Cut, copy, and paste text within the text box

Do this:

Press the arrow keys

Position the cursor to the right of it and press the delete key

Double-click the word

Drag over them inside the text box

Select the text and choose the desired font, size, and style in the Text menu

Choose Justify from the Text menu and select the desired justification

Click anywhere outside the text box

Type command-period

Select the text and choose the desired command from the Edit menu.

You can copy text from a text editing program such as Microsoft Word and then paste it into a text box in the QuickScribe notation window. Just copy the text from the other program, switch into Performer, double-click or insert a text box, and then paste.

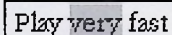
Changing text attributes

Text attributes like point size, style (bold, italic, etc.), justification (left, center, or right), and display properties (title page only, etc.) can be changed after text has been entered.

To change the attributes of an entire text box, click the text once to select all of the text in the box. Then choose the desired attributes in the Text menu. This works for staff names, staff abbreviations, and marker text as well.

To change the attributes of individual words within a text box:

1. Double-click the text box to edit it.
2. Select the desired text by dragging over it



3. Choose the desired text attribute from the Text menu.
4. Click anywhere outside the text box to complete the text entry.

Play *very* fast

Installing fonts in the Text menu

The fonts that you see in the Text menu are the fonts that you have installed in your Macintosh system. If you are not familiar with how to install text fonts in your Macintosh system, refer to your Macintosh documentation.

- ☛ When troubleshooting font problems in Performer, determine if the problem occurs in your word-processing software, or other programs that deal with text. For example, if you can't find a font that should be in the list, check the font list in your word processor. Most likely, it will be missing there, too, and you know that the problem lies somewhere in the Macintosh system.

Printing a track as a single instrument part

To print a track as a single instrument part:

1. Select the entire track.

If you need help with this, see "Choosing what tracks to display" on page 347.

Printing a keyboard part on a piano staff

Printing a score

2. Click the QuickScribe notation button to open the notation window.
3. As described in this chapter, add text to the title page and set the Score Options in the mini-menu as desired.
4. To display the track name in front of the staff as the instrument name, use the Part Names option in the Score Options mini-menu command.
5. If you are printing several instrument parts, repeat this procedure for each track.

You won't need to change the Score options because the formatting is remembered when you change tracks. Just close the current part, select the next track and click the QuickScribe notation window button to view and print the next part.

If you want to preserve the notation window separately for each track, you can do so by copying each track into its own separate sequence. Since each sequence has its own separate QuickScribe notation window, each part will be preserved.

Use the procedure in the previous section to print a keyboard part (which is in a single track). To display the track on a grand staff:

1. Choose Track Options in the QuickScribe notation window mini-menu).
2. Choose the track that contains the keyboard part from the pop-up list.
3. Uncheck the Use Default check box, if necessary.
4. Choose the Grand Staff option.
5. Set the spacing options as desired.
6. Click OK.

When you select multiple tracks, Performer places them together in the same staff system. So, to print a score, select all the tracks you want to include in the staff system for the score, and then open the QuickScribe notation window. To adjust the spacing between the staves in the system, as well as the spacing between systems, choose Score Options (score window mini-menu) and set the spacing options as needed.

Creating blank staff paper

Controlling note spellings

To create blank staff paper:

- 1. Select empty tracks.**

Select as many empty tracks as you'd like staves in the systems on the page.

- 2. Open QuickScribe notation window.**

- 3. Use the Measure spacing and Set Score Length mini-menu commands to determine the number of empty measures.**

Accidentals in the QuickScribe window are governed by the current key signature in the Conductor track. To change the way notes are spelled, use the Change Key command in the Change menu. For more information, see chapter 32, "Change Key" (page 547).

Chapter 24 *System Exclusive*

Basics

Performer allows you to record, playback, and edit MIDI System Exclusive messages. Common types of System Exclusive messages include patch dumps, preset selections, editing parameters, etc. Performer can thus store patches, samples, and other important information from your MIDI equipment in system exclusive form. Patches, edit parameters, and other special commands can be incorporated into musical sequences, greatly expanding the resources of your MIDI sound modules.

System Exclusive messages are a special type of MIDI data. A System Exclusive message consists of a header, body, and an 'end of message' byte. (A byte is a unit of digital information, roughly equivalent to a single character or letter.)

The header labels the following data as System Exclusive information, and includes a code identifying the manufacturer of the equipment transmitting the data.

The body of the message contains the actual data being sent. This data may take any form the manufacturer desires. While there are some standards for the format of System Exclusive information, for the most part *a System Exclusive message is only understood by the type of equipment that generated it*. As a result, recording a patch dump from one synthesizer and sending it to another will generally not produce useful results. Performer does not respond to or interpret System Exclusive data; any analysis or editing of the body of the message is the user's responsibility.

Finally, the end of message byte, F7, marks the end of the System Exclusive data, and signals Performer to interpret subsequent information as standard MIDI data.

As defined in the MIDI specification, a System Exclusive message must begin and end with an F0 and F7 byte, respectively. In addition, only hexadecimal values of 7F (127 in base ten) or less are allowed.

Recording and Playing System Exclusive Messages

When you click the OK button after inserting or editing the contents of a System Exclusive event, Performer will scroll to and highlight any bytes that violate the conditions just stated.

System Exclusive messages are recorded and played back like any other MIDI data. These messages vary in size; information for a bank of patches, for instance, may be 10-20K or more. No matter how long a message is, it is treated as a single event by Performer. Note that a long System Exclusive message can briefly halt recording or playback as Performer processes the data; it is best to place larger System Exclusive events like patch or bank dumps in separate sequences, or at the start of a sequence before the actual music begins.

Because System Exclusive messages have no channel assignment, they are sent to every MIDI device connected to a port. If you have several devices of the same model or brand connected to the same port they may all respond to a message sent to or from just one of them. Conversely, some manufacturers encode channel assignments into the body of the System Exclusive message. Performer is unable to access or rechannelize such an assignment.

For example, if the playback assignment for a track is channel 1, but a System Exclusive message full of patches intended for that synth includes an encoded assignment to channel 16, the synth won't receive the patches.

Find out if any of your equipment encodes channel assignments in its System Exclusive messages, and be careful about changing channel assignments on equipment to which you intend to send System Exclusive. If you encounter difficulty when working with System Exclusive data, try patching the MIDI device directly to the Macintosh MIDI interface, to prevent interaction with other equipment.

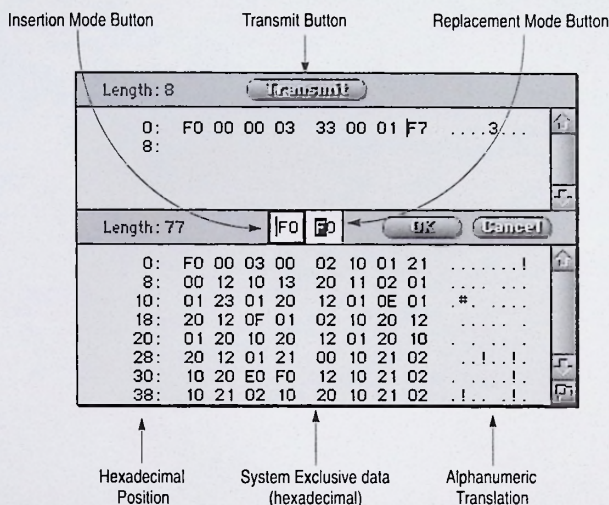
Note that the Input Filter, found in Performer's Basics menu, defaults to System Exclusive unchecked. Unless you explicitly check the box next to System Exclusive, you will be unable to record System Exclusive messages.

Viewing & Editing System Exclusive Data

System Exclusive data can be viewed and edited in the Event Editing window for the track on which it is recorded. In an Event List, a System Exclusive message will consist of the System Exclusive symbol and as much data as can fit on one line:

□ F0 43 01 05 7C 28 32 F7

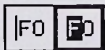
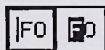
To see the entire message, option-click or double-click on the System Exclusive event. A window appears:



The window is divided into a top and bottom portion. The bottom portion displays the system exclusive data contained in the event. The top portion is used to type in and transmit short system exclusive "request" messages, which can be sent to a synthesizer that requires a short system exclusive bulk dump request message to initiate a bulk dump to be recorded into the lower portion of the window.

The System Exclusive data is displayed in hexadecimal (base 16) numbering. Each pair of hexadecimal digits, which include the numerals 0-9 and the letters A-F, represents a byte of data. Each line contains eight pairs of digits. To the left of each line of data is a two-digit hexadecimal number indicating the position of the first byte of

Editing Data in the System Exclusive Window



data in that row. The first row starts at position 00, the next at 08, the third at 10 (this equals 16 in hexadecimal), and so forth. To the right of each row of data is its translation into alphanumeric characters (using the ASCII standard). Most of the time this translation will be garbled and useless, but patch names and other text in the System Exclusive message may be visible.

The length of the System Exclusive message is displayed at the top left. This is the number of bytes of data in the message.

The scroll bars let you scroll through long messages. The Grow box in the lower right corner lets you adjust the size of the window. When you press the OK button, Performer checks the changes you have made to the data and will scroll to and highlight any byte that does not conform to the MIDI specification. After confirming your changes, Performer closes the window. Pressing the Cancel button closes the window without making any changes to the data.

You can directly edit the hexadecimal data in the System Exclusive window using the mouse and Macintosh keyboard. There are two basic editing modes: Insertion mode and Replacement mode. The editing mode is selected by clicking on the appropriate button at the top center of the window; the currently selected mode is indicated with a darkened border.

Insertion mode: This mode is similar to standard Macintosh text entry. To insert new values, click the mouse to position the insertion point, and type in new values. Use the delete key to delete previous digits. You may edit only in the hexadecimal portion of the display.

Replacement mode: In this mode, one character is always highlighted. Typing a new character replaces the current highlighted character, and then highlights the next character. Use this mode if you are just changing a few bytes in a system exclusive message, as the display requires less updating while typing new values.

Cutting, Copying, and Pasting

To edit a System Exclusive event:

- 1. Activate the Event Editing window that contains the System Exclusive event.**

If neither Event Editing window for the track is open, double-click on the track name and an editing window will appear. If one is open, simply click on it.

- 2. Double-click on the System Exclusive event.**

The System Exclusive window appears.

- 3. Select the editing mode.**

Click on the appropriate button. If just a few bytes need to be edited, use Replacement mode. Otherwise, use Insertion mode.

- 4. Edit the data.**

In Insertion mode, delete the incorrect bytes and type in new data. In Replacement mode, click on the first digit of data to be replaced and type in the new data. The old data is written over.

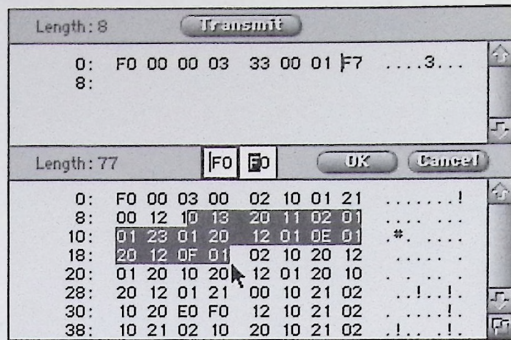
- 5. Press OK to confirm your changes and close the window, or Cancel to close the window without making any changes to the data.**

If you press OK, Performer will scroll to and highlight any byte that does not conform to MIDI specification requirements.

To Cut, Copy, or Paste a region of hex data in *replacement* mode:

- 1. Select the data.**

To do so, drag over it with the mouse.



2. Cut, copy, or replace the selected region.

To Cut or Copy, press command-X or command-C respectively. The selected data will be placed in the Clipboard. To replace the selected data, type in or paste new data, which will replace the highlighted data.

Inserting System Exclusive Data in an Event Editing Window

You can insert system exclusive data into an Event Editing window. This is handy for inserting a short system exclusive message, like a parameter change or dump request, without having to record it. The following steps apply to System Exclusive insertion in an Event List window. Refer also to the chapter *The Graphic Editing Window*.

To insert a System Exclusive event into an Event List window:

1. Activate the Event List window into which you want to insert the System Exclusive event.

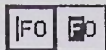
If the Event List window is not open, double-click on the track name to open it. If it is open, simply click on it.

2. Press the Insert button in the title bar of the Event List window.

3. Select System Exclusive from the menu.

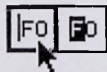
A new system exclusive event pops up.

4. Enter the location for the system exclusive event.



Editing System Exclusive Data With the Edit Menu

Transmitting a System Exclusive Message



Recording Sysex into the Editor Window

5. Press the Tab key to move to the data field.

The System Exclusive window appears.

6. Select Insertion mode.

Click on the left button at the top center of the window.

7. Type in the data.

In Insertion mode, you can delete the incorrect bytes and type in new data. See the above section on editing System Exclusive data for more information.

8. Press OK to confirm the insert and close the window, or Cancel to cancel the insert and close the window.

When confirming your insert, Performer will scroll to and highlight any byte that does not conform to MIDI specification requirements.

The commands on the Edit menu work as normal on System Exclusive events; these events can be cut, pasted, shifted, etc. within a file or between files just like any other Performer event. The only way to alter the body of a System Exclusive message is to use the System Exclusive window as described above. In all other cases, Performer treats the message as a single event.

To transmit a system exclusive message from the system exclusive editor window:

1. Click the insertion mode button.
2. Click between the F0 and F7 in the top portion of the window.
3. Type in the system exclusive data.
4. Click Transmit.

To record system exclusive into the system exclusive editor window:

1. Be sure that your MIDI hardware and cables are set up properly.

Make sure there is a MIDI cable from the MIDI OUT on the device you will be recording from to the MIDI IN on your interface.

2. If Performer is in **MultiRecord** mode, switch to regular record mode to avoid problems.

To do so, select **MultiRecord** in the Tracks window mini-menu to uncheck it.

3. Open an **Event Editing** window for a track and press the **Insert** button in the title bar.
4. Choose **System Exclusive** from the menu.

A system exclusive pop-up event will appear.

5. Type in the measure, beat and tick location for the event, using the tab key to move from one field to the next.
6. Press tab one more time to open the **System Exclusive Editor** window.

The system exclusive editor window will appear.

7. If necessary, type in a bulk dump request message in the top portion of the window.

This is only necessary if your synth requires it. Many synths allow you to initiate the transfer by pressing a button on the synth itself.

8. Initiate the system exclusive data transfer from your MIDI device.

To do so, press the button on the device—or whatever is needed—to cause it to transmit the desired system exclusive dump. If you typed in a bulk dump request message, click the **Transmit** button. If all is well, the system exclusive data will appear in the lower portion of the window.

9. Click **OK** to save the system exclusive data or **cancel** to discard it.

It is not necessary to enable system exclusive data in the **Input Filter** when recording data into the system exclusive editor window.

Recording System Exclusive into a Track

As with earlier versions of Performer, you can also record system exclusive data into a track. To record a system exclusive message into a track:

1. **Be sure that your MIDI hardware and cables are set up properly.**

Make sure there is a MIDI cable from the MIDI OUT on the device you will be recording from to the MIDI IN on your interface.

2. **Choose Set Input Filter from the Basics menu in Performer and check the System Exclusive option.**

If the System Exclusive option is not checked, system exclusive data will be filtered on input and will not be recorded.

3. **If Performer is in MultiRecord mode, switch to regular record mode to avoid problems.**

To do so, select MultiRecord in the Tracks window mini-menu to uncheck it.

4. **Record-enable a track in the Tracks window.**

5. **Start recording.**

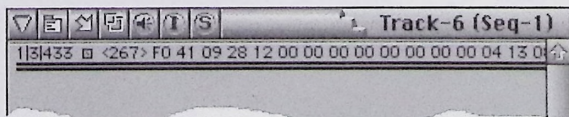
6. **Send the system exclusive data from your MIDI device.**

To do so, press the button on the device—or whatever is needed—to cause it to transmit the desired system exclusive dump. If you have the MIDI Monitor window open, you will see the MIDI System Common light (labelled *Co*) turn black while the data is being received by Performer.

7. **Wait a few seconds, longer if it is a large bulk dump, and then stop recording.**

8. **Open the Event List window to view the System Exclusive event in the track.**

What you should see is something like this:



Hints

If the Event List window is empty, or you do not see a System Exclusive event, check the Input Filter and cable connections and try again. You may also want to open the MIDI Monitor window to see if the data is actually being received by the Macintosh. If the *Co* light doesn't turn black when you send the data from the device, then there is a problem with the MIDI connections or with the device that is transmitting the system exclusive.

Most synthesizers and many other MIDI devices allow you to dump patch settings as System Exclusive messages. You can use Performer to store and organize these messages, creating a library of patches and presets. Store each patch or bank of patches as a separate sequence in one or more files. This way you can use the name and comment fields to label your presets, and use the Load command to quickly access them. To restore a patch or bank, load the desired sequence and play it.

You can paste System Exclusive dumps of sounds and settings at the start of a sequence. This lets you use patches or settings that can't fit into your MIDI devices' preset storage, and ensures that the right sounds are loaded for the sequence. Use the standard Copy and Paste commands to place the system exclusive events at the start of the sequence. It is best to leave a measure or two of space after the system exclusive messages and the start of the music, to allow your equipment to process the data. Use the comments fields in the Chunks and Tracks windows to describe the system exclusive data you've pasted into your sequence; system exclusive messages are hard to identify from their appearance.

Some manufacturers allow you to edit patch parameters over MIDI, using short system exclusive messages. This can add a great deal of expression to a sequence. For example, the attack of a filter envelope could be controlled with system exclusive and controller data, creating different bowing effects with a violin patch.

Some instruments must receive a handshake message before they will transmit a System Exclusive message. If this is the case with one of your MIDI instruments, first consult the user's manual for the instrument (or if necessary, the manufacturer) to find out the hexadecimal string that comprises the handshake message. Type this message into a Performer track using the System Exclusive editing window as described above, then copy the track and paste it to a

Be Careful

'library' sequence for backup purposes. Back in the original sequence, play-enable the track containing the handshake message and record-enable an empty track. Upon playback, the handshake will be transmitted to the instrument, which will respond by dumping to the record-enabled track.

System exclusive data is not associated with a channel, as defined in the MIDI specification. System exclusive data in a track is merely sent to the port you specify for playback; no channel number can be attached. Some manufacturers have decided to include a channel number in some of their system exclusive messages. This number cannot be changed. Therefore, even if data is being sent to channel 3, for example, system exclusive messages contained in that data might be sent to a channel other than 3.

System exclusive data is complex, and varies greatly from device to device. If you are uncertain about your equipment's system exclusive implementation, you should be very careful in using or editing system exclusive data. Most of the time, turning a piece of equipment off and then on again will clear any strange behavior caused by incorrect system exclusive data; however, incorrect use of system exclusive data could permanently erase presets from a synthesizer or other MIDI device.

Chapter 25 *Selecting Regions*

Selecting a Region to Edit

This chapter explains how to unleash Performer's powerful Edit menu and Region menu commands. Specifically, it tells you how to select regions of data. Once selected, the region can be modified with any command in the Edit menu or Region menu.

The commands in the Region menu and Edit menu change data in a selected region of a single sequence. This region *must* be specified before selecting a command from one of these two menus. Otherwise, Performer won't know where to make the changes to the data. We'll refer to this area as the "selected region".

A region can be selected in the Tracks List, the Tracks Overview, or in the Event Editing window for a track. Each track has three available Event Editing windows: the Event List window, the Graphic Editing window, the Notation Editing window, and the QuickScribe notation window.

☞ *Once you have selected a region in one of these windows, the window must remain active when you choose the desired Edit menu or Region menu command. If the window containing the selected region is not activated, either no data will be changed or unwanted data will be changed. To activate a window, click its title bar anywhere.*

Selecting a Region Using the Tracks List and the Edit Bar

This method of region selection allows you to select a region containing any combination of tracks. It lets you specify the region numerically, which gives you a high degree of precision. It works with *all* Edit menu and Region menu commands.

Another advantage of this method is that the region remains selected after you choose an edit command. This allows you to do multiple operations on the same region without resetting its Start and End times.

1. Activate the Tracks window for the sequence you wish to modify by clicking on it.

The title bar of the window will activate.

2. Enter the Start time of the region in the Edit Bar.

See the preceding section, *Using the Edit Bar* for details on entering the Start time in the Edit Bar.

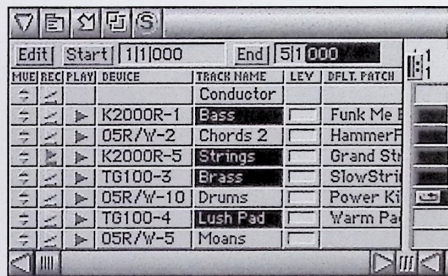
3. Enter the End time of the region in the Edit Bar.

See the next section, *"Shortcuts for using the Edit Bar"* for details on entering the End time in the Edit Bar.

4. Select the track or tracks that contain the region.

Click on a track name to select a track, or drag over a set of tracks. Use Shift-click to select non-contiguous tracks.

The region is now selected.



Events occurring *on or after* the Start time and *before* the End time will be affected by a region command. For example, in 4/4 time, if the Start time is 9111000 and the End time is 13111000, all events starting on the very first tick of the first beat of bar 9 through the very last tick of the fourth beat of bar 12 (12141479) will be modified. An event occurring directly on 13111000 (the very first tick of the first beat of measure 13) will not be modified.

Shortcuts for using the Edit Bar

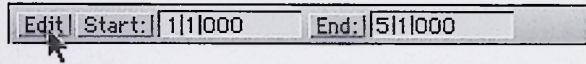
The Edit Bar holds the beginning and end times for the selected region in the Tracks List. To enter a beginning time, click in a field in the Start time and enter a value; to enter the end time, click in a field

in the End time and enter a value. You can use the Tab key (or decimal point key on the keypad) to cycle through the measure | beat | tick fields.

Clicking on the word "Start" enters the current time displayed in the Counter as the Start time. Clicking on the word "End" enters the current time as displayed in the Counter window as the End time.

Double-clicking on the word "Start" enters the beginning time of the sequence as the Start time. Double-clicking on the word "End" enters the end time of the sequence as the End time.

Double-clicking on the word *Edit* sets the Start and End times to the beginning and end of the sequence. This is equivalent to double-clicking on both the *Start* and *End* words. There are several quick ways to load times into the Edit Bar.



The Remember Times command is a powerful way to set the edit bar. If you have a region selected in another window besides the Tracks window, and you want to load that region's start and end time into the Edit bar in the Tracks window, use Remember Times. To "remember" a pair of Start and End times, activate the window containing the times and choose Remember Times from the Basics menu (or press command-R).

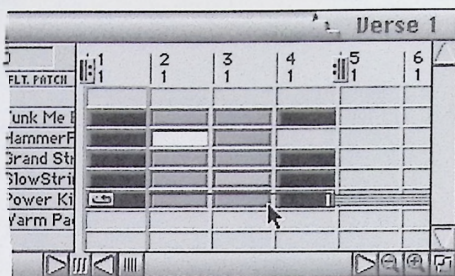
Times are remembered for each type of window as follows:

- *Markers window*: the times of the first and last highlighted markers are remembered.
- *Event Editing windows*: the times of the first and last highlighted events are remembered.
- *Tracks window*: the times in the Edit Bar are remembered.
- *Consolidated Controls panel*: the times in either the Memory Bar or Auto Record Bar are remembered, whichever is visible. If both are, the Memory Bar times are remembered.

Selecting a Region in the Tracks Overview

Once you have used Remember Times, click the word "Edit" in the Edit bar. The remembered times are loaded into the Edit Bar.

To edit the data in a segment, you must first select it. When a segment is selected, it highlights. Segment selection is exclusive from track name selection in the Tracks List. If you select segments, any highlighted track names will deselect.



Below are several convenient shortcuts for selecting segments:

To select this:	Do this:
A single segment	Click it.
Several adjacent segments	Drag over them. If the segments are in several adjacent tracks, drag over them in a diagonal fashion.
Several non-adjacent segments	Hold down the Shift key and click the segments you wish to select. They will highlight.
A segment in all tracks	Click the segment in the Time Ruler. All segments beneath will highlight.
One or more segments in all tracks	Drag in the Time Ruler.
Deselect segments when more than one are highlighted	Hold down the Shift key and click the segments you wish to deselect. They will unhighlight.

After you select one or more segments, Performer loads the start and end times of the region into the Edit bar for convenient selection in the Tracks List.

Selecting data in an Event Editing window allows you to precisely specify the region's boundaries; you can even select a single event if you want.

Each track has four available Event Editing windows: the Event List window, the Graphic Editing window, the Notation Editing window, or the QuickScribe notation window. The data in the track is the same regardless of which window you use. For example, if you edit data in the Graphic Editing window, the changes you make will be immediately reflected in the track's Event List window.

This method of region selection allows you to precisely specify the region's boundaries; you can even select a single event if you want. The Snip, Repeat, and Retrograde commands do not affect events highlighted in the event list. All other edit and region commands do.

Selecting a Region Using Event Editing Windows

Selecting a Region Using the Event List Window

If the Event List window for the track you wish to modify isn't already open:

1. Click on the track name containing the region to highlight it.

This selects the track.

2. Choose Edit from the Tracks window mini- menu.

An Event Editing window for that track will appear. If the Graphic Editing window appears, go to the mini-menu on its title bar and choose Event List. The Event List window for the track will appear. Alternatively, you can just double-click on the name of the track you wish to modify. If the Event List window is open but not active (i.e. its title bar isn't visible), simply click on the Event List window to activate it.

3. Select the region of events you wish to change.

Below is a summary of how to select events in the Event List.

To select this:	Do this:
A single event	Click on it.
Several adjacent events	Drag over the desired events. All events dragged over will highlight.
Several non-adjacent events	Hold down the Shift key and click on the events you wish to select. They will highlight.
Deselect events	Hold down the Shift key and click on the event(s) you wish to deselect. They will unhighlight.
Extend the currently selected region	Command-click or Command-drag at the desired end location.

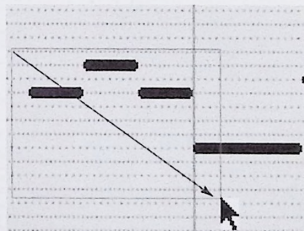
This defines a region of events which will be affected by the next command on the Edit or Region menus.

Selecting a Region Using the Graphic Editing window

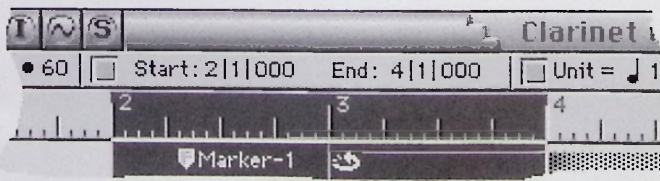
Track-1 (Seq-1)					
1 1 362	♩C3	185	164	0 396	
1 2 100	♩D3	185	164	0 339	
1 2 278	♩E3	185	164	0 158	
1 3 009	♩F3	185	164	0 137	
1 3 240	♩G3	185	164	0 175	
1 4 165	♩D3	185	164	0 159	
1 4 292	♩F3	178	164	0 173	
1 4 439	♩E3	185	164	0 204	
2 1 170	♩D3	185	164	0 156	
2 1 393	♩C3	185	164	0 144	
2 2 475	♩C3	185	164	0 230	
2 3 201	♩D3	185	164	0 168	
2 3 360	♩E3	185	164	0 108	
2 4 033	♩F3	185	164	0 163	

There are two ways to select data in the Graphic Editing window:

1. Drag a selection box over the desired notes (or other data)



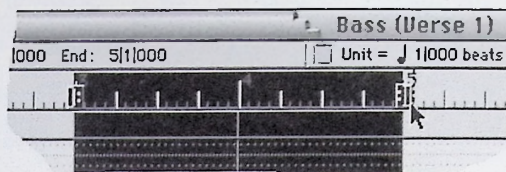
2. Drag horizontally in the Time ruler at the top of the window



For more information about selecting a region using the Graphic Editing window, see "Selecting Notes" on page 311.

Selecting a region using the Memory-cycle repeat barlines

If you would like to quickly select the region within the Memory-cycle repeat barlines to insert a loop, quantize, or any other editing operation, double-click one of the two repeat barlines in the Tracks Overview or Graphic Editing windows.



Selecting Chunks in the Song Window

A Chunk in a song window can be selected by clicking it once. To select several adjacent Chunks, either drag over them or shift-click each one. To select non-adjacent Chunks, shift-click each one.

Selecting in the QuickScribe notation window

For information about selecting notes in the QuickScribe notation window, see "Selecting notes for editing" on page 366.

Chapter 26 *Edit Commands*

After you've recorded your music, Performer's powerful editing commands are at your disposal to add, remove, and otherwise rearrange data in a sequence or song. You can edit any amount of data from single events to large regions.

Editing During Playback

Almost all of the editing operations discussed in this chapter can be done while the music is playing back so that you don't have to stop and start the music to hear the result. For example, you could Transpose while the sequence is playing and then use the Undo/Redo command as the music continues playing to compare the original and modified data.

Selecting a Region

The commands in this chapter act on the a selected region in the Tracks List, the Tracks Overview, or one of Performer's track edit windows. Without a selected region, the commands in this chapter do nothing. So be sure to learn how to select a region by reading chapter 25, "Selecting Regions". It contains many powerful shortcuts that will speed up your work.

Editing Commands and the Song Window

The following Edit commands can be used in the Song window: Cut, Copy, Paste, Erase, and Select All. Other Edit commands such as Snip, Splice and Repeat have no effect on Chunks in the Song window.

Setting the Edit Filter

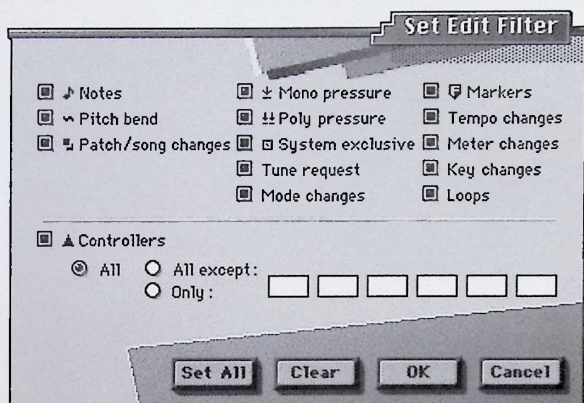
The Edit Filter allows you to specify what types of MIDI information are affected by commands from the Edit menu. It is in effect only when you select a region from the Tracks window. (When editing a region in an Event Editing window, use the View Filter instead.) Using this feature, you can extract different types of information from a region without having to laboriously edit out events that you don't want. For example, if you wanted to copy only patch changes and aftertouch from a track, you could select only those items in the Edit Filter. Only the selected data would be copied to the clipboard. As another example, if you were editing Tempo changes in the Conductor track, you could set the Edit Filter for Tempo changes only. You could then cut and paste Tempo changes without erasing or in any way affecting meter and key changes in the same region.

Remember, the Edit Filter setting you make will affect *all* the commands from the Edit menu, and *all* editing from the tracks window. You should therefore make sure to change it back after doing a specific editing task since it may cause unwanted effects the next time you use the Edit commands.

To set the Edit Filter:

1. Choose Set Edit Filter from the Edit menu, or press command-F.

A dialog box appears.



2. Choose the types of data to be edited by checking the check box for each.

You can choose multiple types of data. You can choose all types of data at once by clicking on the "Set All" button. You can uncheck all the check boxes by clicking on the "Clear" button. Using option-click will check only the check box you click on, unchecking all others; using command-click will check all boxes except the one you click on. Use the Controllers box and its options buttons to select which controllers are affected by Edit operations.

3. Press OK to confirm your choice or Cancel to cancel it.

Specifying Controller Numbers in the Edit Filter

The types of data you select will stay in effect until you change the Edit Filter setting. When you are done using the Edit Filter, you should reset it.

The buttons under the Controllers check box in the Edit Filter allow you to quickly choose which controller data to include in Edit operations. Click in the Controllers check box, click on the type of option you wish and then enter the controller numbers if necessary.

- *All*: All controllers will be affected by Edit operations.
- *All except*: All controllers *except* the controller numbers you enter will be affected by Edit operations.
- *Only*: Only the controller numbers you enter will be affected by Edit operations.

To enter controller numbers for the *All except* and *Only* options, click in the text boxes next to the option and type in the numbers. You can use the Tab key to move between boxes in the same option.

The Clipboard

The Clipboard is a temporary storage place that holds data that is cut or copied. All data that is cut or copied is put on the Clipboard. When you paste, the data to be pasted comes from the Clipboard.

The Clipboard retains data until a new cut or copy action is made. This means that you can cut or copy a region of data once and paste this same information as many times as you like. *The Clipboard retains its data between files.* You can therefore copy data from one file and paste it into another.

To view the Clipboard, choose the Show Clipboard command from the Edit menu. To close the Clipboard, choose the Hide Clipboard command from the Edit menu.

Undo/Redo

The Undo command will undo the effects of both real-time and step recording. Undo will also undo the effects of most commands and actions that add, delete, move, or otherwise modify data.

The Undo command will change to reflect the name of the command just invoked. For example, if Transpose were chosen from the Region menu, *Undo Transpose* would be displayed on the Edit menu when next pulled down.

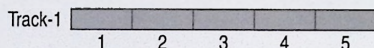
When the Undo command is used, it will generally change to *Redo*. Redo will reinstate the recording or changes to the data you have made. This allows you to effectively undo the Undo, that is, return the sequence to its state before the Undo command was invoked.

You can go back and forth between the Undo and Redo commands as many times as you like. This allows you to make A/B comparisons between the original and modified versions of the region.

Cut

The Cut command removes data in the selected region and places it on the Clipboard. This does not remove the time region specified; instead, it leaves the measures blank (silent), without MIDI events. The type of information that is cut is determined by the Edit Filter. The Cut command is undoable.

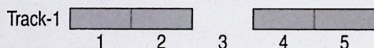
Before measure 3 is cut:



Clipboard



After measure 3 is cut:
(The length of the music is the same.)



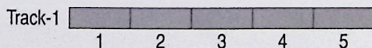
Clipboard



Copy

The Copy command copies the data from the selected region and places it on the Clipboard. The original data is not affected at all. The type of information that is copied is determined by the Edit Filter. The Copy command is undoable.

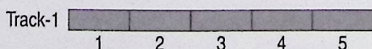
Before measure 3 is copied:



Clipboard



After measure 3 is copied:
(The length of the music is the same.)



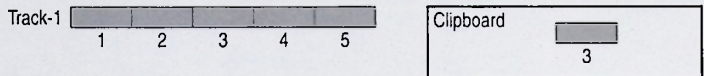
Clipboard



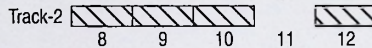
Paste

The Paste command inserts the contents of the Clipboard (i.e. whatever was most recently cut or copied) at the Start point in the Tracks window, replacing what was previously there. The End time in the Edit bar has no effect. The length of the pasted region is exactly that of the data in the Clipboard (including any blank space at the beginning and end of the region that was placed on the Clipboard). The types of information pasted from the Clipboard are determined by the Edit Filter. In addition, only the types of data selected in the Edit Filter are replaced; all other data is unaffected. The Paste command is undoable.

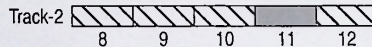
Measure 3 from Track-1 is copied into the clipboard:



Track-2 before measure 3 is pasted:



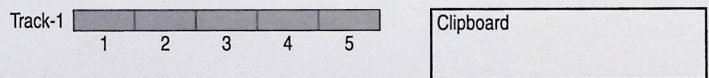
Track-2 after measure 3 is pasted:



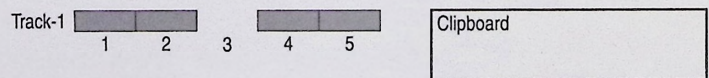
Erase

The Erase command works like the Cut command except that no data is put on the Clipboard: all data in the selected region is removed and the region is left blank. The types of data erased are determined by the Edit Filter setting. The Erase command is undoable.

Before measure 3 is erased:



After measure 3 is erased:
(The clipboard remains empty.)



Repeat

The Repeat command makes an internal copy (which does *not* go on the Clipboard) of the data in the selected region, then pastes, splices or merges this data repetitively immediately following the selected region. For example, repeating bars 1-3 three times places a copy of bars 1-3 in bars 4-6, 7-9, and 10-12. Regardless of the events in the region, *the entire selected region is repeated*. In the above example, the start and end locations in the Edit bar would be set to 111|000

and 4111000, respectively. The entire three bar region is repeated, with each repetition starting on the down beat of the following measure. In most cases, it is best to select entire measures or groups of measures to repeat; this ensures that the repetitions will line up correctly with measure boundaries.

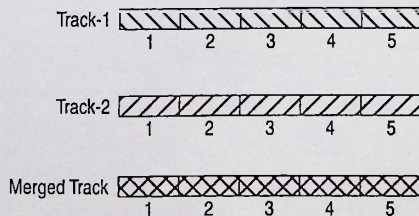
You must select a region with the Tracks window and Edit bar to use the Repeat command; this command will have no effect on a region selected within an Event Editing window.

Using the Paste option in the Repeat dialog box, the repeated data replaces the data in the repeated region: the pre-existing data is erased. Using the Merge option in the Repeat dialog box, the repeated data is merged with the data in the repeated region. Using the Splice option in the Repeat dialog box, the repeated data moves the pre-existing data to a later time in order to make room for the data in the repeated region. The types of data repeated are determined by the Edit Filter setting, as are the types replaced by the Paste option and shifted by the Shift option.

Merge

The Merge command combines the contents of the clipboard with pre-existing data in the selected tracks. The new data is inserted at the Start time in the Tracks window, mixing together the data already in the region and the new material. You need only specify a Start time in the Edit Bar of the Tracks window; the End time has no effect. The types of data merged from the Clipboard are determined by the Edit Filter setting. The Merge command is undoable.

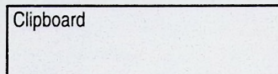
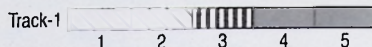
Since Performer allows unlimited tracks assigned to one channel, the Merge command isn't always necessary. You should use it only when you are certain that data in two tracks should be merged together (this is often true when you create a track during editing for the express purpose of merging it with another track later). Once tracks are merged, they cannot be separated later.



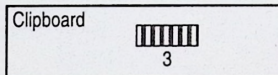
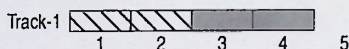
Snip

The Snip command removes data in the selected region and places it on the Clipboard. The time region containing the data is removed as well, closing up the gap between the beginning and end of the region: events at the End time are moved to the Start time. The types of data snipped are determined by the Edit Filter setting. The Snip command is undoable.

Before measure 3 is snipped:



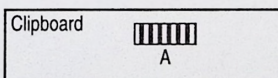
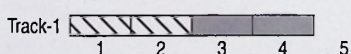
After measure 3 is snipped:
(Measures 4 & 5 are shifted to 3 & 4.)



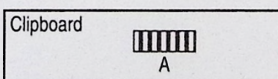
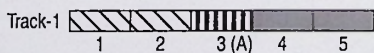
Splice

The Splice command inserts data on the Clipboard in the selected region, making a gap for the new data and moving pre-existing data later in time to make room for the new material. The event just after the Start time moves forward the amount of time of the region on the Clipboard. Thus, if a one-measure section is copied to the Clipboard and spliced at measure 3, the old events starting at measure 3 shift to measure 4. The types of data spliced from the Clipboard are determined by the Edit Filter setting, as are the types shifted to make room. The Splice command is undoable.

Before measure A is spliced:



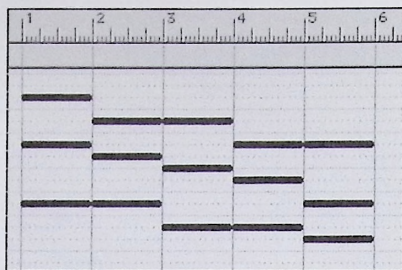
After measure A is spliced:
(Measures 3 & 4 are shifted to 4 & 5.)



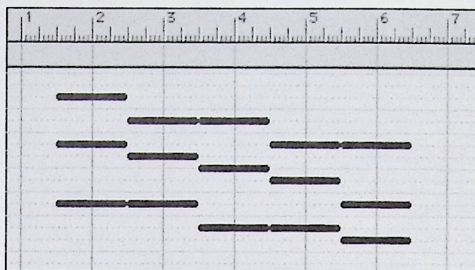
Shift

The Shift command moves the selected region ahead or back in time. The shift distance is specified by a number of measures and/or a quarter notes | ticks duration, entered into a dialog box. Measures are computed based upon the meter marking at the start point of the selected region. To move the region ahead, select the Advance

option; to move it back, select the Delay option. The region will be shifted in time by the amount you enter. The types of data shifted are determined by the Edit Filter setting. The Shift command is undoable.



Original track



Delayed by a half of a measure

Show/Hide Clipboard

Choosing Show Clipboard from the Edit menu brings up a window which describes the contents of the Clipboard (in text). When the Clipboard is showing, the menu entry changes to Hide Clipboard. When you choose this, the Clipboard window is closed. For a description of the Clipboard, see the section *The Clipboard* earlier in this chapter.

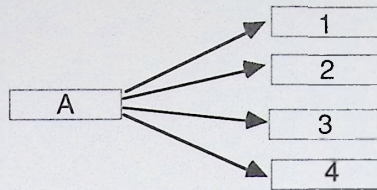
Select All

This command generally selects all items in the active window. If a Tracks window is active, choosing Select All will select all the tracks (thus highlighting all track names). If an Event List window is active, choosing Select All will select all events in it.

Editing Between Several Tracks

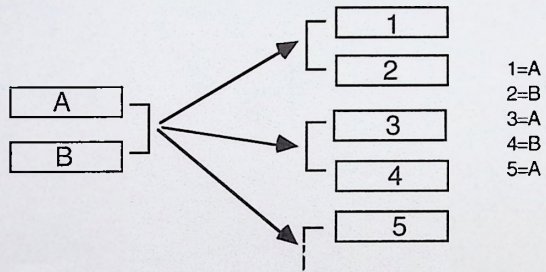
You can use the Edit commands to move or change data from one or more original tracks to one or more target tracks (even in another file). The number of original and target tracks doesn't have to be the same. If they are unequal, Performer will cycle through the target tracks, pasting and merging from the original to the target tracks until all original material is placed. Three examples are given. In the first there is one original track and several destination tracks. In the second the number of original tracks is less than the number of target tracks. In the third the number of original tracks is greater than the number of target tracks.

Example one: You have copied data from one track and paste or merge it to four destination tracks:



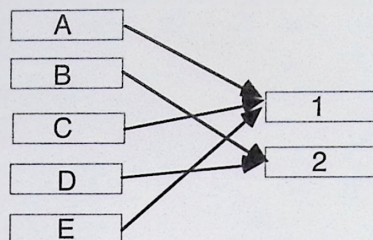
If pasted or merged, the data from the one original track is placed in each destination track.

Example two: You have cut information from two tracks and paste or merge it to five destination tracks:



If pasted or merged, track A's information goes to track 1, then track B's goes to track 2. The process proceeds in the same manner until track 5: track A goes to 3, B to 4, and A to 5.

Example three: You have copied information from five tracks and paste or merge it to two destination tracks:



Paste: 1=E, 2=D
Merge: 1=A+C+E
2=B+D

If pasted, track A's data will go to track 1, track B's data will go to track 2, track C's data will go to track 1, etc. This will result in track 1 containing data from track E, and track 2 containing data from track D. If merged, track 1 will end up with data from tracks A, C, and E, and track 2 will have data from tracks B and D.

Hints

Removing a Specific Type of Data From a Track

The following examples illustrate some creative uses of the Edit commands.

This works for removing one or more particular kinds of data from a track such as a mono key pressure, patch changes, etc.

1. **Choose Edit Filter from the Edit menu, or press command-F.**
2. **Check only the check box for the type of data you wish to remove.**

Option-click on the check box for the type of data to be removed; all other check boxes will uncheck.

3. **Select the track with the data to be removed.**

Click on the track name; it will highlight.

4. **Enter the Start and End times of the region in the Edit bar.**
5. **Choose Erase from the Edit menu.**

If you want to save this information for possible future use, cut it instead of erasing it, and paste the information into a new and separate storage track. You can later merge it back into the original track if you like.

Here's an alternate method for removing a specific kind of data using the Event List window:

1. **Open the Event List window for the track with the data to be removed.**

This is done by clicking on the track name and choosing Edit from the Tracks window mini-menu.

2. **Choose View Filter from the Event List window mini-menu.**

3. **Check only the check box for the type of data you wish to remove.**

This will display only that type of data in the Event List window. Option-click on the check box for the type of data to be removed; all other check boxes will uncheck.

4. **Select a region of events.**

Click on the first event and drag over the rest of them.

5. **Choose Erase from the Edit menu.**

Here's a method for "echoing" a track: all of the data in a track is copied to another track and shifted just slightly in time. The effect is a slight delay or echo.

1. **Activate the Tracks window for the sequence that contains the track to be echoed.**

Click anywhere in the Tracks window.

2. **Choose Add from the Tracks window mini-menu.**

A new track appears in the track list.

3. **Name the new track.**

Option-click on the name. A pop-up box will appear into which you can type the new name.

4. **Select the original track by clicking on it.**

The track name will highlight.

5. **Enter the Start and End times of the region in the Edit bar.**

Creating an Echo Effect with a Track

6. Choose Copy from the Edit menu.

The data in the selected region is placed on the Clipboard.

7. Select the new track by clicking on it.

The track name will highlight.

8. Choose Paste from the Edit menu.

The contents of the Clipboard are pasted into the new track. It now contains a copy of the original track.

9. Choose Shift from the Edit menu.

10. Select the Delay option and enter zero bars and 01240 duration.

This will delay the data in the new track by an eighth note.

A few variations on the above:

Before selecting Paste to paste the data into the new track, you could set the Start time in the Edit bar in the Tracks window to 240 ticks later. This would save you having to use the Shift command to shift the data by 240 ticks. You could use the Change Velocity command on the Region menu to decrease the velocities on the echo part to make it softer than the original. You could assign the echo part to another synthesizer or voice with a different patch or the same patch, panned in stereo.

The Repeat Command vs. Looping

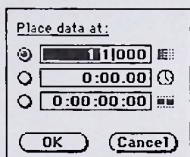
The Repeat command is useful for repeating sections of music, creating the same effect as looping. The advantage of using the Repeat command over looping is that you can make each of the repeats slightly different. Loops take less memory (which is an advantage on their side) and each copy is exactly the same. Choose between them according to your needs at the time.

Repeat can also be used to create trills (by repeating just two very short notes) or drum rolls (by repeating just one drum note).

The Shift Command and Attack Times

You may find that certain patches on your synthesizers have quicker attack times than others. You can play two notes at exactly the same time on two different synthesizers (with two different patches) and hear them not sounding together: one seems to "play" first and the

Shift, Paste, Merge, & Splice Using Real Time and SMPTE Time



second takes a longer time to come to full volume. The Shift command is useful for lining up attacks in situations like this one. By shifting a track forward or backwards just slightly (try a value of less than 100 ticks to start with), you can make all instruments sound as if they are attacking notes at the same time. You may want to leave some of the disparity between attack times: let your ear guide you.

The Shift, Paste, Merge, and Splice commands allow you to specify Real Time, SMPTE time, or Measure/Beat/Tick time as the time unit used to perform the operation. Just click the radio button corresponding to the time unit you wish to use in the dialog box that appears when any of these commands are selected.

The dialog box shown to the left appears when you are working in an Event Editing (Graphic, Event List, or QuickScribe notation) window, no events are currently selected, and you choose Paste, Merge, or Splice.

Chapter 27 *Region Commands 1*

Editing During Playback

Almost all of the editing operations discussed in this chapter and the next can be done while the music is playing back so that you don't have to stop and start the music to hear the result. For example, you could change note velocities in a track while the music is playing and then use the Undo/Redo command as the music continues playing to compare the original and modified data.

Selecting a Region

The commands in this chapter act on the a selected region in the Tracks List, the Tracks Overview, or one of Performer's three track edit windows. Without a selected region, the commands in this chapter do nothing. So be sure to learn how to select a region by reading chapter 25, "Selecting Regions". It contains many powerful shortcuts that will speed up your work.

Transpose

The Transpose command transposes all notes in the selected region. For information about the Transpose command, see the chapter called *Transpose*.

Quantize

Quantizing changes the attack and release times of note events to make them more rhythmically precise. Attacks and releases are aligned with a *grid*, a set of locations that occur on the beat and its subdivisions. Quantize is useful in correcting perceived rhythmic inaccuracies after your sequence is recorded. It does a rhythmic "cleaning up" based upon your specifications.

Some Inaccuracy is Good

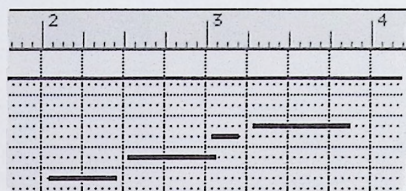
Quantizing is, in its simplest form, a way to make all note events in your sequence occur on a beat or one of its subdivisions, eliminating inaccuracies. But inaccuracy is far from undesirable. In fact, inaccuracy is what gives a piece of music its "feel", its particular rhythmic profile. If you always aligned all attacks and releases with grid locations, your music might have a mechanical, inhuman quality to it. You'll find that you'll often want to preserve some of the rhythmic nuances of your playing. Therefore, Performer allows you to quantize selectively and specify the degree of quantizing you want. The Sensitivity and Strength options accomplish this. In addition, you

Basics

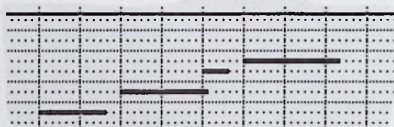
might want to shift the occurrences of the beat slightly ahead or behind the metronome beats in a particular track or section. The Grid Offset option allows you to do this.

Quantize will only alter the locations and durations of note events. All other data in the selected region will be unmodified.

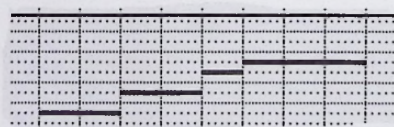
Quantizing a region sets up a grid of equally spaced locations. Notes are then moved from their original locations to the nearest grid location.



Original music



- ☒ Attacks ☐ Releases
- ☒ Don't change durations



- ☐ Attacks ☒ Releases
- ☒ Don't change durations

You can choose to change the attack times and/or release times of notes. There is an added option to leave the note durations unaltered. Choosing to change attack times causes them to be moved to the nearest grid location; release times are left unchanged. Choosing to change release times causes them to be moved to the nearest grid location; attack times are left unchanged. Both of these operations cause an automatic change in note durations.

You can choose not to change the original durations. This prevents durations from being truncated, which may cause the notes to sound chopped.

To Quantize

Note that if you choose to change both the attack and release times, the Don't Change Duration option is automatically disabled. This is due to the nature of the operation: if you change both the attack and release times of a note, the durations will automatically be modified.

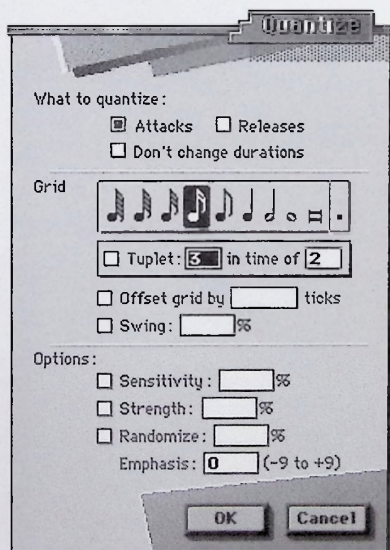
To Quantize a region:

1. **Select the region you wish to quantize.**

See the section *Selecting a Region* at the beginning of this chapter for instructions selecting a region.

2. **Choose Quantize from the Region menu.**

The Quantize dialog box will appear.



3. **Select Attacks, Releases or both to be quantized.**

If you selected Attacks or Releases (not both), select the *Don't change durations* option if you wish to keep the original durations the same. If you did select both Attacks and Releases, this option will be disabled.

Choosing the Grid's Duration Value

4. Select a grid value.

Select any note value from a 128th note to a breve (a double whole note). Select the dot or Tuplet option if necessary.

5. Set Offset, Sensitivity or Strength options.

Optional: see the descriptions below on these features.

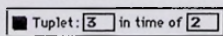
6. Press OK to confirm your choice, or Cancel to cancel it.

The grid value is the distance between grid locations. For example, if you select an eighth note as the grid value, each grid location is an eighth note apart. This means that the note attacks and/or releases will be moved to the nearest eighth note location.

The grid is aligned such that it begins on the first beat of the first measure of the selected region. If a meter change occurs in the selected region, the grid is realigned at the point of the meter change to begin on the first beat of the meter change.

Generally, you should choose a grid value that is the smallest note value in the region. For instance, if you are quantizing a region with lots of sixteenth notes and a few quarter notes, choose a grid value of a sixteenth note.

The grid value can be modified with the dot and/or tuplet boxes. When the dot is selected, it adds one half of the selected duration to the grid value. For example, if the quarter note and dot are selected, the grid value is a dotted quarter, equivalent to three eighths. If the tuplet box is selected, the tuplet specification is applied to the selected duration. This is similar to the way the tuplet box works in the Step Record window. Example: you have three eighth notes in the time of two specified and the tuplet box is checked.



The quantize grid will be set to triplet eighth notes. Each triplet grid location will have a duration of 160 ticks, which is equal to a third of a quarter note (480 ticks). To specify a tuplet grid value:

1. Select the base duration you want.

Click on one of the note symbols.

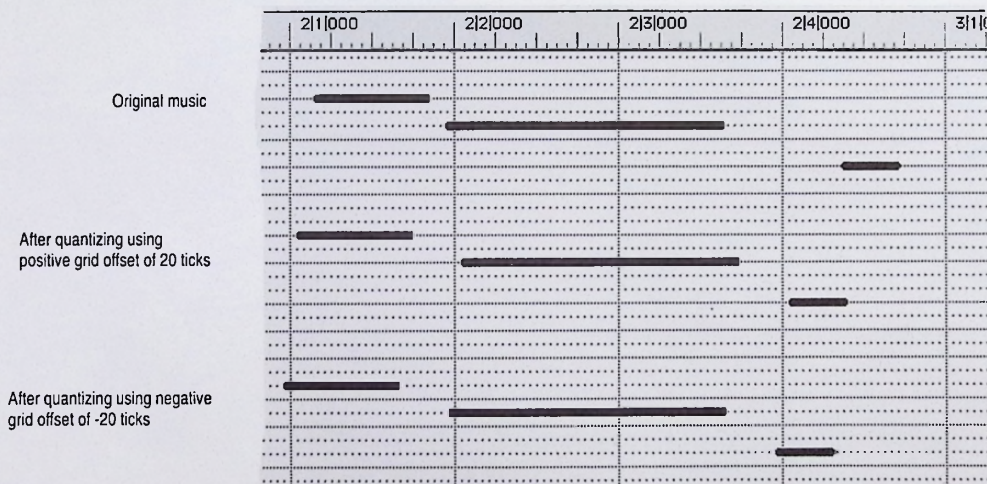
2. Check the tuplet check box.

Grid Offset

3. Enter the number of tuplets in the left text box.

4. Enter the number of regular note values that the tuplet replaces in the right text box.

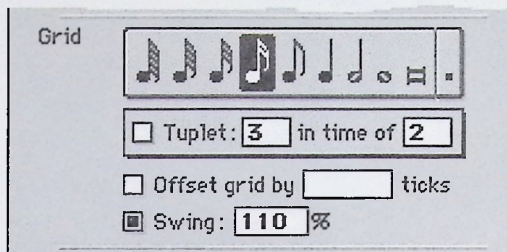
The start of the grid may be offset from its standard position on the first beat of the selected region by a number of ticks. This is done by clicking in the check box next to *Offset by n ticks* and entering a number of ticks to offset the grid by. Positive values offset the grid forward in time (after the beat), negative values offset it backward (before the beat).



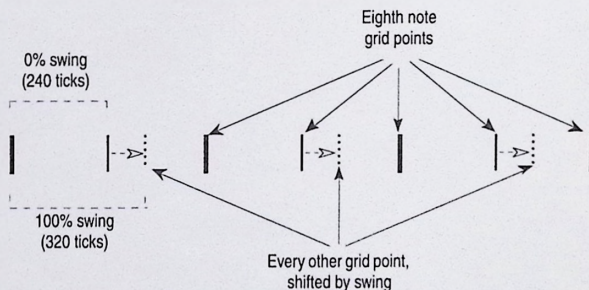
If you enter an offset greater than the distance (in ticks) between grid locations, the number will be scaled down to be less than the distance of the grid value. For example, if you are using a grid value of a quarter note (480 ticks) and you enter an offset of 500 ticks, it will be reduced to an offset of 20 ticks, that is 500 minus 480. Offset values range from -9999 to 9999.

Swing

The *Swing* option delays every other grid point to create a swing, or “jazz”, feel.



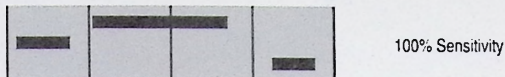
The Swing option defaults to 100%, which produces straight swing. For example, an eighth note grid produces a grid point every 240 ticks. The swing option, at 100%, will delay every other grid point 80 ticks to 320, which is the attack time of the third eighth note in an eighth note triplet.



A larger percentage such as 120% would delay every other grid point to 336 ticks, creating a “loose” swing feel. A smaller percentage such as 80% would advance every other grid point to 304 ticks, creating more of a straight swing feel. The percentage can be any value between 0% and 300%. 0% does nothing and is the same as quantizing without the swing option. 300% delays every other offbeat all the way to the next grid point.

Sensitivity

Each grid location has a "field of effectiveness" in which note events can be moved by the Quantize command. Normally, this field extends from one grid location halfway to the next, affecting all note events. The center of each field is the grid location: each field actually extends out in either direction from the grid location.



Sensitivity is the size of this field. The default sensitivity (without the Sensitivity options selected) is 100%, i.e. extending continuously between grid locations. This field is actually split into *50% before* the grid location and *50% after* the grid location. If you select Sensitivity and enter a value of 50%, the quantizing field will be reduced:

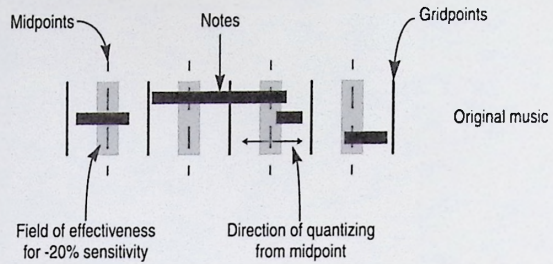


Note that 50% means 25% before the grid location and 25% after it (i.e. 50% of the way to the midpoint between grid locations). Any notes not in the field would *not* be quantized.

As illustrated, a positive Sensitivity value quantizes notes surrounding a grid location. In contrast, negative Sensitivity values quantize notes surrounding the *midpoints* between grid locations.

With positive Sensitivity values, the field of effectiveness extends outward from the grid location. In the case of negative sensitivity, the field extends inward from the midpoints on either side of the grid location. As with positive sensitivity, the field is split on either side of

the midpoint. So if you enter a Sensitivity value of negative 20%, notes from about 41 to 50% before the grid location and about 41 to 50% after would be moved to the grid location:



What's most important is the effect that different Sensitivity values will have on your music. To summarize:

- **Positive sensitivities** clean up the down beats without affecting 'swung' or freely played notes in between.
- **Negative sensitivities** catch major inaccuracies while retaining the music's 'feel'.

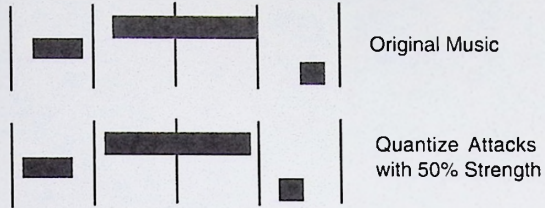
To use the Sensitivity option:

1. Check the check box next to the Sensitivity option.
2. Enter a number between -100 and 100 for the Sensitivity value.

Strength

Another way to preserve some of the rhythmic character of your music while making it more rhythmically accurate is to use the Strength option. Without any options chosen, Quantize will move all note events so that they align perfectly with grid locations. Since this can result in an overly precise effect, you might want to leave some of the original inaccuracy in the passage. The Strength option does this by not moving the note events all the way to the grid locations. Rather, they are moved a percentage of the way toward the grid points. Use the Strength option to tighten up a passage without losing its "feel".

The Strength value specifies the amount that note events move toward grid locations when quantized. A Strength value of 100% (the default) moves them all the way to the nearest grid locations. A value of 0% leaves them where they are. A value of 50% moves them halfway to the grid locations.



Consider this example: there is a note event occurring at 10131450. The grid duration is a quarter note, the Strength option is selected and a value of 40% is entered. When Quantize is okayed, the note will move to 10131462. If no options were selected, it would have moved to 10141000, a distance of 30 ticks. A Strength value of 40% moved it that percentage of the distance (40% of 30 ticks = 12 ticks) to 10131462.

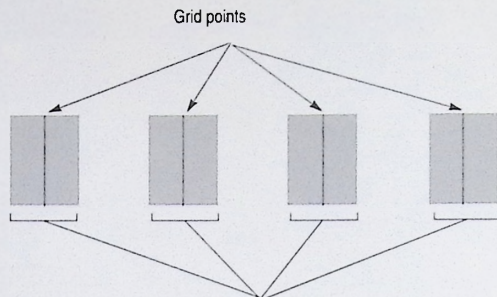
To use the Strength option:

1. Click in the check box next to the Strength option.
2. Enter a number between 0 and 100 for the Strength value.

Randomize

Unlike all of the other Quantize options, which try to make notes more rhythmically precise, the Randomize option does just the opposite: it modifies the quantization randomly to make the notes as rhythmically imprecise as you like. 100% randomization causes note attacks (and/or releases) to be placed entirely randomly. A value of less than 100% reduces the range over which the notes will be randomized, and the grid point sits in the middle of the range. For example, if you choose a 16th note grid (a grid point every 120 ticks), and a randomize value of 50%, the range is 60 ticks, extending 30

ticks before and after each grid point. Thus, a note attack (and/or release) would be randomly placed within 30 ticks of its nearest grid point.



50% Randomization on a 16th note grid produces a region of 30 ticks on either side of each grid point: notes will be placed randomly within this region around each grid point.

Emphasis

This sub-option causes the tendency of the randomization to be earlier or later within the specified range. Thus, if you wish to randomize the note placement within a certain range, but you wish to push the beat by tending to make the notes occur a little bit early, use a negative emphasis; use a positive emphasis if you wish them to tend to be laid back—that is, after the beat. A value of zero equals no emphasis, which causes the randomization to occur evenly within the range.

Hints

If you're trying to simply line up all notes with the beat and its subdivisions, selecting *Attacks* and *Don't change duration* will most likely yield the results you want. If you select both *Attacks* and *Releases*, all notes will begin and end at grid locations. This may make them *too* precise, sounding chopped, inhuman, or just wrong.

If you are trying to get the notes of a chord to line up to make the attack precise, consider using the *DeFlam* command on the *Region* menu instead of *Quantize*. It will line up the attacks but will not move the notes to a grid location.

If you want to quantize a region containing a mixture of sixteenth, eighth, and quarter notes which contains just two or three thirty-second notes, set the grid value to sixteenths for quantizing. You can

subsequently change the thirty-seconds back individually. Otherwise, if you choose too small a duration value, many notes may move to undesirable locations. Choose a grid value that reflects the general rhythmic profile of the region in its most active, complex areas.

Performer is very capable, but it can't read your mind; you'll find that there are some notes that just don't get moved to the locations you want them to be. This is due to the original location of the note not being within the quantize field for the desired grid location. The quickest way to fix this is to change them individually in the Event Editing Window for the track they are in.

You can use the Offset command to do some very fancy quantizing that may not, at first glance, even seem like quantizing. For example, suppose you've just entered your sequence in 4/4 time and you decided that you'd like to make notes that fall on the third beat of every measure slightly late. First, set the grid value to the whole note. Grid locations will occur only once per measure, on the first beat. Choose the Offset option and enter a value of 980 ticks. Since 960 ticks constitute one half note, 980 ticks is 20 ticks after the third beat. Now choose the Sensitivity option and enter a value of 20%. This limits quantization to those notes near the third beat already (if you didn't use the Sensitivity option, *all* notes would end up quantized to the third beat). You may have to experiment with the percentage. Use a larger percentage if some notes don't get quantized that should; use a smaller percentage if some notes get quantized that shouldn't.

The Offset option was not designed for the mass shifting of notes in a region. If you want to move a section of your sequence forward or backward in time, use the Shift command on the Edit menu.

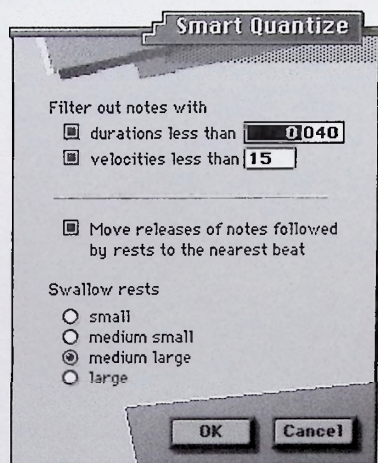
Smart Quantize

Smart Quantize is especially designed for quantizing data that will be transferred to music notation software, such as Mark of the Unicorn's Professional Composer.

- ☛ Performer's built-in QuickScribe™ notation window does not require quantization of any kind; it will notate original, unquantized MIDI data.
- ☛ Our latest notation software package, Mosaic™, does not require Smart Quantize because it uses its own quantizing algorithms when transcribing MIDI data.

Smart Quantize greatly enhances the transcription of the music when it is transferred to programs like Professional Composer, which do not have sophisticated transcription algorithms like those employed in Performer's QuickScribe notation window. Using a specially-designed, floating quantize grid, Smart Quantize quantizes both attacks and releases to ensure that notes are notated on the correct beat with the proper duration. Triplets and tuplets will be properly quantized, along with notes in straight time.

Smart Quantize also provides several options to optimize the transcription of your musical performance.



The first set of options helps to correct errors in your Performance. Often when we play a keyboard or other MIDI controller, we will accidentally tap a key next to the one we meant to play, causing an extra, short note with a low velocity. Or, we may have held a chord and not realized that we were accidentally holding down an extra key, creating a long held note, barely audible, with a very low on-velocity. Errors like these can interfere with the accurate transcription of your music.

The *Filter out notes with* options delete unwanted notes when you Smart Quantize. The *durations less than* option allows you to delete notes shorter than the duration you specify. What value you choose

should depend on the tempo and nature of the music, and your individual playing style. The *velocities less than* option deletes notes with velocities shorter than the one specified.

The second option, *Move releases of notes followed by rests to the nearest beat*, will help prevent dotted durations followed by a short rest. Use this option if you do not intend for your music to have offbeat releases. For example, if you tend to release notes a little bit early when you play, the notes may be transcribed shorter than they should, followed by a short rest. This option recognizes premature and late releases and notates them properly with their full duration. Use this option to reduce the number of rests, especially if you are transcribing music with standard durations and very few rests. Don't use this option if your music contains precise, mid-beat releases that you want transcribed precisely.

Smart Quantize tends to close gaps between attacks and releases. The *Swallow rests* options allow you to adjust the size of gaps that will be closed. There is no hard and fast rule for choosing these options. In general, if you don't want lots of short rests in the transcription, use the *larger* options. If you want a more precise transcription of your performance, which may contain dotted durations followed by rests and so on, use the *smaller* options.

To use Smart Quantize:

- 1. Select the region that contains the music you will transcribe.**

If you are transcribing an entire sequence, select all the tracks in the tracks window and set the Edit Start and End times in the Edit Bar to include the entire sequence.

- 2. Choose Smart Quantize from the Region menu.**

The Smart Quantize dialog box will appear.

- 3. Set the Filter notes, Move releases, and Swallow rests options.**

These options are discussed in detail above.

- 4. Click OK to confirm your choice or Cancel to withdraw the command.**

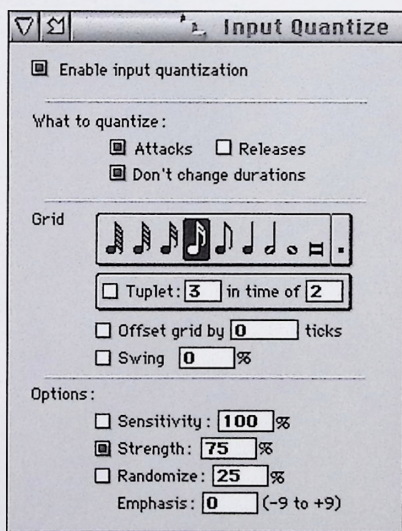
Input Quantize

Opening the Input Quantize Window

Because Smart Quantize does so many things at once, it may take longer than regular quantizing. Expect to wait for a moment if you have quantized a large region.

The Input Quantize feature quantizes notes during recording in the same fashion as a standard drum machine. Notes get quantized immediately as they are being received and appear quantized in the track afterwards. If you are loop recording, the notes will play back quantized the next time through the loop.

To open the Input Quantize window, choose Input Quantize from the Windows menu:



This is a standard Performer window that can be left open while you play back, record, edit, and use Performer's other windows and features. This allows you to make changes to Input Quantize *during recording*.

Turning Input Quantize On and Off

To turn on Input Quantize, check the Enable input quantization box. When Input Quantize is turned on, all incoming notes are quantized according to the options shown in the Input Quantize window. To turn off Input Quantize, simply uncheck the box.

Setting the Input Quantize Options

Changing Options During Recording

Loop Recording

Humanize

Input Quantize offers the same type of quantization as the regular Quantize command in the Region menu. The only differences are that 1) the quantization occurs in real time as data is being recorded, and 2) the options for each type of input quantization are set in the Input Quantize window rather than the Quantize dialog box. But Input Quantize options behave the same way as their counterparts in the Region menu.

For more information about the Input Quantize options, see the section earlier in this chapter regarding the *Quantize* command in the Region menu.

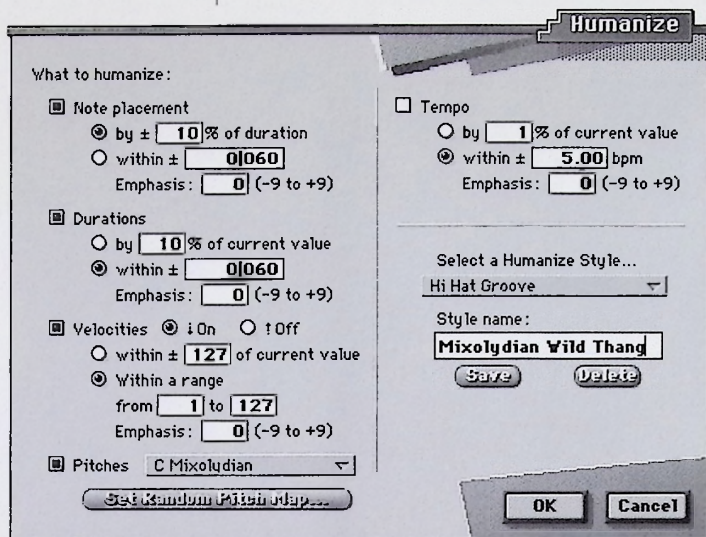
Any option in the Input Quantize window can be changed at any time, even during recording. For example, you can record several bars with quantization turned on and then turn it off on the fly as you record the next several bars. As another example, you might check the triplet check box while recording triplets and uncheck it as you switch back to straight time.

For information about how to use input quantize while loop recording, see the looping chapter.

The Humanize command lets you add a “random” element—or “humanized” feel—to your music. With this command, you can randomize any combination of the following elements of your music:

- Note placement
- Note durations
- Velocities
- Pitches
- Tempo

In addition, you can create a unique blend of these randomization elements and save it as a randomization style, which you can recall and use at any time. You can use the Humanize command to create arpeggiation effects, hi-hat (or other percussion instrument) grooves, and other dramatic musical effects.



The Humanize command combines the randomize options of the following commands: Quantize, Change Duration, Change Velocity, and Scale Tempo. And it adds the randomization of note pitches.

For even further control over the feel of your music, be sure to check out chapter 30, “Groove Quantize”.

Choosing What to Humanize

Each type of musical element is a check box option in the Humanize dialog box. To randomize that element, check its box. If you don't want to randomize it, uncheck it. For example, if you want to randomize velocities, but not note placement, uncheck note placement.

Humanize Sub-options

Each element has sub-options which affect how it randomizes. These sub-options are discussed briefly below. All of the elements have an Emphasis sub-option, which is discussed in a separate section. The last section explains how to save and recall Humanize styles.

Note Placement

The Note Placement sub-option randomizes the attack times of notes within a range (in ticks) of the note's current location. You can specify the range as a number of ticks, or as a percentage of the note's duration, in which case longer notes have a larger range and shorter notes have a smaller range.

Durations

The Durations sub-option randomizes durations within a range of the current duration, which you specify in the box provided. This range can be specified as a absolute number of ticks, or by a percentage of the current duration.

Velocities

The Velocities sub-option lets you choose between on (attack) or off (release) velocities. In addition, it lets you randomize the velocity within a range of its current value, or within an absolute range. Randomizing within a range of its current value lets you preserve the overall contour of the velocities, while still mixing them up a little bit. Randomizing within an absolute range lets you limit them to a certain range of values.

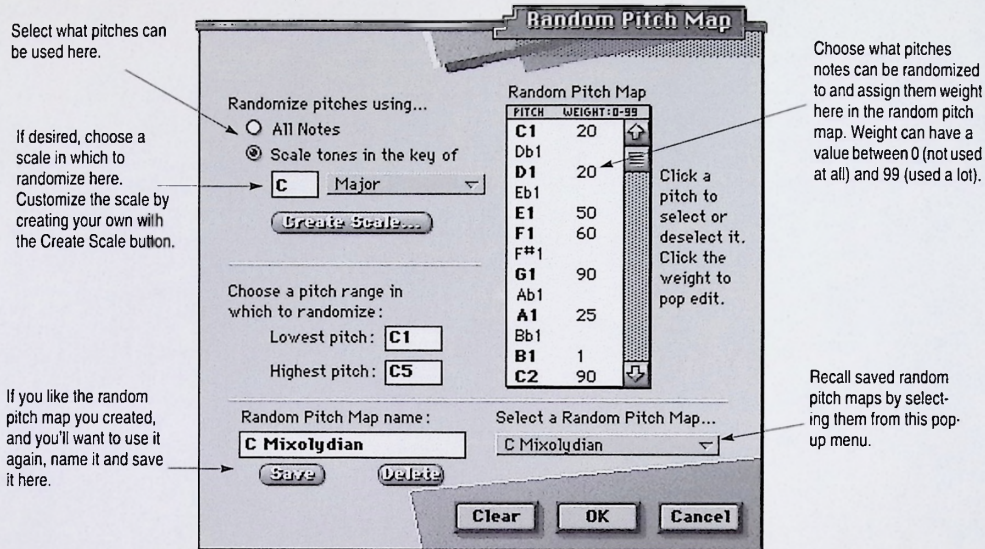
Pitches

The pitches sub-option allows you to randomize the pitch of each note within the region. You can randomize to:

- Any pitch
- A range of pitches
- Certain pitches within a range

In addition, you can assign weight to each pitch within a range so that it is used more or less often during the randomization process. For example, if you are creating a humanize style that generates a hi-hat part, you can assign more weight to the closed hi-hat pitch and less weight to the open hi-hat pitch so that the result is mostly closed hit with an occasional open one.

The Set Random Pitch Map button lets you determine what pitches notes can be randomized to:



The Create Scale button

The create scale button opens the create scale dialog box. For information about this dialog, see "Creating a Custom Scale" on page 484.

Saving, Recalling, and Deleting a Random Pitch Map

To Save a Random Pitch Map:

1. Set up the pitch map as desired.
2. Type in a name for the Random Pitch Map.
3. Click Save.

To recall a random pitch map, select its name from the pop-up menu.

To delete a random pitch map:

1. Select the pitch map you wish to delete from the pop-up menu.

Tempos

2. Click Delete.

To rename a pitch map:

- 1. Select it from the pop-up menu.**
- 2. Type in the new name.**
- 3. Click Save.**
- 4. Delete the original one.**

The Tempos sub-option randomizes existing tempos within the selected region. Note that it does not generate new tempo events. (To do so, use the Change Tempo command in the Change menu.) Note that this option only affects tempo events that already exist in the Conductor track. If the region you select has no tempo events in it, this option will have no effect. If so, use the Change Tempo command in the Change menu to generate tempo events.

By ___% of current value

This option randomizes the tempo of each selected tempo event within a range that is expressed as a percentage of the tempo value. For example, if the tempo is 100 bpm, and you enter 10 percent, the tempo will be randomized within a range between 90 to 110 bpm (± 10 bpm).

By \pm ___ bpm

This option randomizes the tempo of each selected tempo event within a range of beats per minute.

Emphasis

Each Humanize element has an emphasis sub-option, which can be any value between -9 and +9. The emphasis value causes the tendency of the randomization to be higher or lower within the specified range. Thus, if you wish to randomize within a certain range, but you wish values to tend to be higher, use a positive emphasis; use a negative emphasis if you wish them to tend to be towards the lower end of the range. A value of zero equals no emphasis, which causes the randomization to occur evenly within the range.

Saving, Recalling, Deleting, and Renaming a Humanize Style

To Save a Humanize style:

1. **Set up the Humanize style as desired.**
2. **Type in a name for the style.**
3. **Click Save.**

To recall a Humanize style, select its name from the pop-up menu.

To delete a Humanize style:

1. **Select the pitch map you wish to delete from the pop-up menu.**
2. **Click Delete.**

To rename a Humanize style:

1. **Select it from the pop-up menu.**
2. **Type in the new name.**
3. **Click Save.**
4. **Delete the original one.**

DeFlam

The DeFlam command looks for groups of note that are very close together. When such a group is found, the average attack time of the group of notes is computed. All notes in the group are moved such that their attack times are aligned exactly to the average time.

The group of notes that is deflammed is determined by the tick value you specify. This creates a "window" of effectiveness. Groups of notes within that window will be deflammed.

Basics

When chords are played in real time, the attacks of individual notes are often splayed as in the example below, which shows two four-note chords:

1 4 325	♭C4	♭72	♭64	1 254
1 4 331	♭G3	♭54	♭64	1 204
1 4 336	♭G4	♭55	♭64	1 192
1 4 343	♭A3	♭74	♭64	1 209
2 4 422	♭E4	♭85	♭64	1 120
2 4 432	♭G3	♭85	♭64	1 108
2 4 436	♭B4	♭59	♭64	1 123
2 4 439	♭B3	♭79	♭64	1 108

DeFlam is useful for consolidating the attacks of the notes in such chords. The following is the result of using DeFlam with a tick value of 20 on the above passage:

1 4 333	♭G4	♭55	♭64	1 192
	♭C4	♭72	♭64	1 254
	♭A3	♭74	♭64	1 209
	♭G3	♭54	♭64	1 204
2 4 432	♭B4	♭59	♭64	1 123
	♭E4	♭85	♭64	1 120
	♭B3	♭79	♭64	1 108
	♭G3	♭85	♭64	1 108

The quarter notes are now grouped into two precise chords.

DeFlam averages the attack times of the groups of notes; there is no grid involved as there is with the Quantize command. In the above example, the resulting attack time of each chord is the average of the attack times of the four original notes. The durations of the notes are left unchanged.

DeFlam attempts to detect grace notes and rolled chords and, if found, will leave them as such.

Using DeFlam

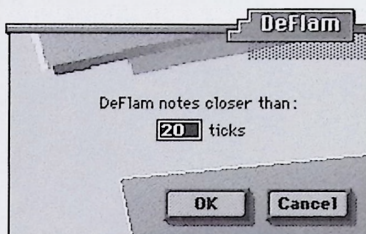
To use DeFlam:

1. **Select the region you wish to modify.**

See *Selecting a region* at the beginning of this section. The region should include only the notes to be deflammed.

2. **Choose DeFlam from the Region menu.**

A dialog box appears.



3. **Enter a tick value.**

The tick value sets the "window" for the command. Notes within this window will be deflammed.

4. **Press the OK button to confirm your choice, or the Cancel button to cancel it.**

If DeFlam leaves some notes out, try using a larger tick value; if it includes too many notes, try decreasing the tick value. (Remember, you can Undo and Redo the DeFlam command.) The correct tick value depends greatly on the particular passage you are working with. It may take several attempts to determine the correct value.

Change Velocity

Change Velocity is a powerful command that lets you modify the velocities of all notes in a region. You can remove irregularities, make passages louder or softer and create crescendos, diminuendos and other similar effects. Note that not all MIDI keyboards and sound modules respond to velocity data, and those that do may need to be set up to respond correctly to this information. Consult your owner's manuals for details.

Using Change Velocity

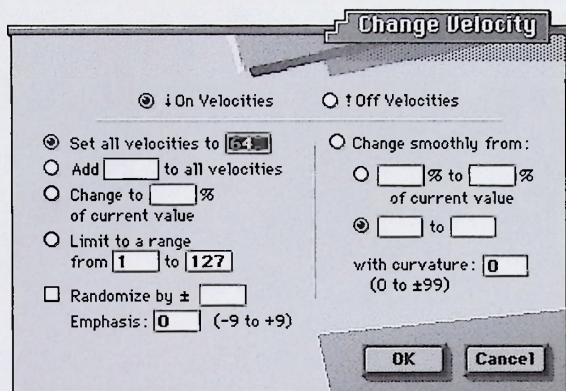
To use change velocity:

1. Select the region you wish to modify.

See *Selecting a region* at the beginning of this section.

2. Choose Change Velocity from the Region menu.

A dialog box appears.



3. Choose between modifying on (attack) velocities or off (release) velocities.
4. Choose the desired option to alter the velocities.

Select from the *Set all velocities to* __, *Add* __ to all velocities, etc. options. Click on the radio button next to the option.

5. Enter the values required by the option.

Click in the box and type in the value. If there are additional values to enter, use the Tab key to highlight each successive box or click in each box directly and enter or edit the value.

6. Press the OK button to confirm your choice, or the Cancel button to cancel it.

You can Undo/Redo the Change Velocity command.

On Velocities or Off Velocities

There are a number of options in the Change Velocity dialog box. Each one allows you to modify velocity values in a different way. Don't let this complexity confuse you; once you select an option, you can ignore all information pertaining to other options.

On velocities control the speed at which a note is attacked. This affects the note's loudness most dramatically, but on velocities can also affect other aspects of the note event such as its timbre (e.g. the harder the note is struck, the brighter it sounds). Off velocities control the speed of the release of the note and are sometimes used to control its decay rate. At this time, very few synthesizers utilize off velocity information.

The Change Velocity command can be applied to either on or off velocities: choose the type you wish at the top of the dialog box. The default setting changes the on velocities.

Set all velocities to ____

This option sets all velocities in the selected region to a single value. Enter a value between 1 and 127. A result of this option is that all note events in the region will be played back at a constant volume.

Add ____ to all velocities

This option adds the value you enter to all velocities in the selected region. The value must be in the range -127 to 127. Velocities that end up less than 0 or greater than 127 will be set to zero or 127, respectively. A result of this option is a uniform increase or decrease in volume of all notes in the region, within the zero to 127 range.

Limit to a maximum of ____

This option modifies all velocities in the selected region that have a velocity greater than the value you enter, by changing them to that value. Enter a value between 1 and 127. This option imposes a maximum volume level on all notes in the region. You can use it to change the velocities of notes that "stick out".

Limit to a minimum of ____

This option modifies all velocities in the selected region that have a velocity less than the value you enter, by changing them to that value. Enter a value between 1 and 127. A result of this option is that there will be a minimum volume level for all notes in the region. You can use this option to assure that notes that may be inaudible have sufficient velocity to be heard.

Change to ___% of current value

This option scales all velocities by the percentage value you enter. Percentage values must be between 1 and 999. For example, if all notes in the region have a velocity of 120 and you enter a percentage value of 50%, the velocities will be set to 60. Thus, to halve velocities, use a value of 50%. To double them, use 200%. Velocities that end up less than 0 or greater than 127 will be set to zero or 127, respectively.

Scaling by a percentage may give you better results than using the *Add ___ to all velocities* option above since the original velocity contours are preserved. Try both to discover which gives you the results you want.

Change smoothly from

This option has two basic sub-options: *___% to ___% of current value* and *___ to ___*. Each gives you a different way to specify the smooth velocity changes. The first changes by percentages, creating a smooth velocity change for notes in the selected region while preserving some of the original velocity characteristics (most notably the accents); the second creates a smooth change with no fluctuations. You can specify a curvature for the change, which determines its contour.

___% to ___% of current value: This sub-option changes velocities similarly to the *Change to ___% of current value* option described above. The difference is that the percentage value *changes* from the first to the second entered value: the first value applies to the beginning of the region, the second to the end. Enter a value from 1 to 999 in each box. The curvature (see below) controls the contour of the change.

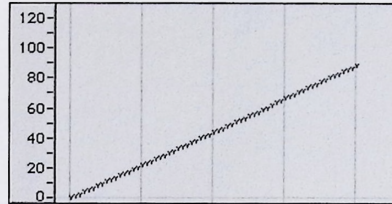
___ to ___: This sub-option assigns the first entered value to the first note velocity in the selected region and the second entered value to the last note velocity in the region. All other velocities are calculated to make a smooth transition between the first and last ones. The curvature (see below) controls the contour of the change over the region.

Curvature: This sub-option controls the contour of the smooth change. With a curvature of zero, the change is linear from the first to the second entered value. As you increase the value positively (with values from 1 to 99), more of the change will take place towards the

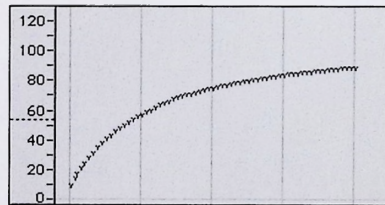
end of the region. As you increase the value negatively (with values from -1 to -99), more of the change will take place towards the beginning of the region.

Here are a few examples to clarify this option:

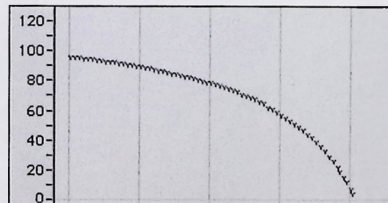
Change smoothly from 1 to 90, curvature 0. This results in a linear increase. One effect of this is a gradual, even crescendo.



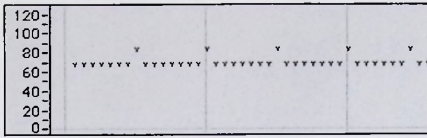
Change smoothly from 10 to 90, curvature -50. This results in a pronounced upward curve with most of the changes happening at the beginning. One effect of this is a crescendo that occurs more rapidly at the beginning.



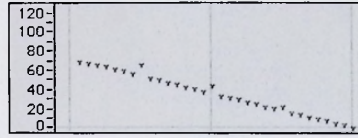
Change smoothly from 96 to 5, curvature 45. This results in a downward curve which is more pronounced at its end, e.g. a diminuendo that speeds up toward its end.



Change smoothly from 100% to 1%, curvature 0. When applied to a region in which there are several notes accented, this results in a downward "curve", which retains the accent structure of the original.



Original velocities



Changed smoothly from 100% to 1% with 0 curvature

The velocity values assigned to notes by this option are calculated based on the distance of the note from the beginning or end of the selected region. If the first note in the region is after the start time, for instance, it will be assigned a velocity value somewhere between the values entered. Notes in a chord (with simultaneous attacks) are assigned the same velocity. If a specific change sounds too abrupt, it is probably due to the position of the note in the region. For instance, if notes occur at irregular times (e.g. bunched together followed by a sparse section), velocities will be assigned on the basis of note placement. The result may not seem smooth on a per-note basis.

Randomize

The randomize option allows you to randomize the velocities within a range of the current value, which you specify in the box provided. The emphasis sub-option causes the tendency of the randomization to be higher or lower within the specified range. Thus, if you wish to randomize the velocities within a certain range, but you wish them to tend to be higher, use a positive emphasis; use a negative emphasis if you wish them to tend to be towards the lower end of the range. A value of zero equals no emphasis, which causes the randomization to occur evenly within the range.

Note that the randomize option is a check box, which means that it can be selected together with one of the radio button options above. This allows you to randomize at the same time as executing one of the other Change Velocity options.

The Effect of Velocity Is Synthesizer-dependent

Synthesizers vary widely in their response to velocity information. Some do not respond at all to any velocity information; most do not respond to off velocities. Some patches sound very different when large on velocity values are used. Some patches do not respond at all to velocity information, even when the synthesizer as a whole does.

Alternative Methods for Volume Changes

Most often, you can be assured that if your synthesizer does respond to velocity information, you can control the loudness of note events. You should be able to create effective crescendos and diminuendos. This will work well for short-range dynamic effects. For longer effects (a 30 second fade, for instance), you might notice a “staircase” effect, i.e. discrete changes in the volume level.

Some synthesizers define one of the MIDI controllers as the volume control. If so, you might be able to use the Create Continuous Data command to create smooth volume changes with a controller. Some synthesizers have only a few discrete volume levels, making it hard to create smooth changes. Consult the *Hints* in the *Event List Window* section for details about determining the limits of the controller values on your instrument.

It is also possible with some synthesizers to control volume directly from an assignable controller. A patch may use the breath controller to control its volume, for instance. By sending this controller data through Performer, you can control volume changes.

There is no single solution for making volume changes effectively with every patch on every instrument. You must find the best way for each given situation and use the appropriate command (Change Velocity or Create Continuous Data) to create the kind of volume changes you want.

Change Duration

The Change Duration command modifies the duration of all notes in the selected region without changing the placement of attack times. This means that the amount of time a note is “on” or sounding can be changed without affecting its actual rhythmic placement in relation to other notes and events. The Change Duration command is useful for changing the articulation or space between notes. You can make note events sound connected or separate in relation to each other, for example. It also provides some useful utility functions.

Basics

Duration is the length of a note, i.e. the time between its attack and release. Durations are specified in quarter notes and ticks (e.g. a half note would be 21000 or two quarter notes). A note must have a duration of at least one tick (01001).

Using Change Duration

A note's duration may be misleading in some cases: what you see might not be what you hear. The actual duration of a note event is dependent upon the synthesizer and patch used. The attack and release sent by Performer are equivalent to manually pressing and releasing a key on the synthesizer. Also, some synthesizers have a sustain pedal that can be used to hold notes, extending the effective duration of notes far beyond the time when the release has been sent to the synthesizer.

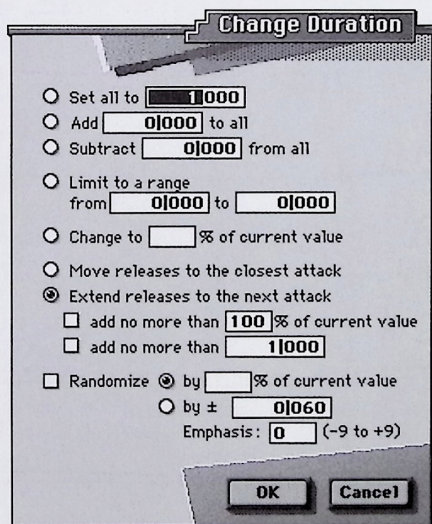
To use Change Duration:

1. Select the region you wish to modify.

See the *Selecting a region* section above.

2. Choose Change Duration from the Region menu.

A dialog box appears.



3. Choose the option you want by clicking in the appropriate radio button.

You can only choose one option.

4. Enter the value required by the option.

Click on the box and type in the value.

5. Press OK to confirm your choices or Cancel to abort the command.

You can Undo and Redo the Change Duration command.

The following options are available:

Set all to ____

All durations in the selected region will be changed to the entered value. The value entered must be between 01001 and 99991999.

Add ____ to all

The value entered will be added to all durations in the selected region. The value entered must be between 01001 and 99991999.

Subtract ____ from all

The value entered will be subtracted from all durations in the selected region. The value range is 01001 and 99991999. Notes which would have a duration of less than one tick after the subtraction are given a duration of one tick.

Limit to a maximum of ____

Any notes in the selected region which have a duration greater than the value entered will be assigned to that value. The value entered must be between 01001 and 99991999.

Limit to a minimum of ____

Any notes in the selected region which have a duration less than the value entered will be assigned to that value. The value entered must be between 01001 and 99991999.

Change to ____% of current value

The durations of notes in the selected region are scaled by the entered percentage value. The relative lengths of the notes are preserved and their overall length is modified. The percentage value entered must be between 1 and 999. To halve durations, enter a percentage value of 50%; to double durations, use 200%. Using this option may yield more of the results you want than using the *Add ____ to all* option; durations are scaled proportionally instead of uniformly lengthened. Try both to see which you like best.

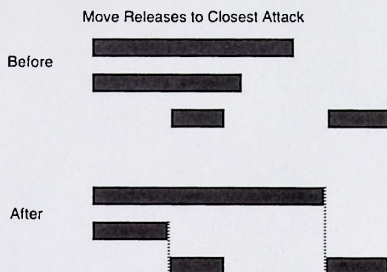
Move releases to the closest attack

The release of each note in the selected region is modified to occur just before the attack of the nearest note following it in time. The duration of the note may increase or diminish depending on when the next note occurs. If the next note occurs before the release of the current one, the release of the current note will be moved back in

Extend releases to the closest attack

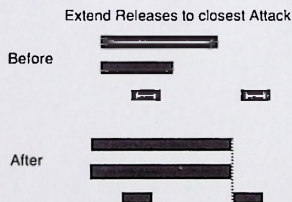
Extend Releases sub-options

time, making the duration shorter. If the next note occurs after the release of the current one, the release of the current one will be moved forward in time, making the duration longer. If the note release is after the end of the selected region, the note is left unmodified. This option creates a legato effect, where the notes follow each other smoothly and without a gap.



The duration of each note in the selected region is extended until it ends at the same time as the next note begins. This is very similar to the *Move releases to the closest attack* option but the durations of all notes are guaranteed to increase since the release is always moved forward in time. Any notes which end after the last note in the selected region begins are left unmodified.

This option creates a legato effect, where the notes follow each other smoothly and without a gap.



Use these sub-options to extend releases and still preserve rests in a region. If both sub-options are checked, each note in the region is analyzed and the option that results in the smallest duration increase is used. Try using these options after quantizing attacks and releases

to improve the notational display of the notes. Doing so adjusts the durations of notes that were not played in a legato style. For best results, experiment with different values. A good setting to start with is 100%.

Randomize

The randomize option allows you to randomize durations within a range of the current duration, which you specify in the box provided. This range can be specified as a absolute number of ticks, or by a percentage of the current duration. The emphasis sub-option causes the tendency of the randomization to be higher or lower within the specified range. Thus, if you wish to randomize the durations within a certain range, but you wish them to tend to be longer, use a positive emphasis; use a negative emphasis if you wish them to tend to be shorter. A value of zero equals no emphasis, which causes the randomization to occur evenly within the range.

Note that the randomize option is a check box, which means that it can be selected together with one of the radio button options above. This allows you to randomize at the same time as executing one of the other Change Duration options.

Hints

Some drum machines cannot receive dense bursts of MIDI data; they will often miss data altogether, causing drop-outs and other perplexing problems. Since the durations of drum machine events tend to be very short, the note releases tend to follow the attacks very quickly resulting in a very high data density. A problem also arises with Step Record: the release for each note is sent immediately before the attack of the next note. One way to improve the situation is to delay the note releases (most drum machines ignore these anyway since their note events have such short decays) by making the note durations longer. Use the Change Duration command to set the durations of these note events to a value somewhere around 10 to 20 ticks.

The Change Duration command is very good for adjusting the articulation of note events. Rendering a passage legato or staccato is simple: for a legato effect (each note releasing just before the next one is attacked):

1. **Select the region.**
2. **Choose *Change Duration* from the Region menu.**

3. Click on the *Set all to* ___ option.

4. Enter a value of 1 tick (0|001) and press OK.

This insures that durations are uniform for the next step.

5. Choose *Change Duration* from the Region menu.

6. Choose the *Extend releases to the next attack* option and press the OK button.

This is useful for removing any rests or gaps between notes.

For a staccato effect (each note releasing well before the next, giving the passage a rhythmically sharp, incisive character):

1. Select the region.

2. Choose *Change Duration* from the Region menu.

3. Click on the *Change to* ___ % of current value option.

4. Enter a value of 50% and press the OK button.

If you enter a part in Step Record, all durations will be as long as specified, rendering a legato effect. You can use the Change Duration command to add the articulation you want to these parts.

Split Notes

The Split Notes command lets you selectively cut or copy notes in the selected region. The selection is based upon pitch, velocity and/or duration. This means that only notes with specific pitches, ranges, durations and velocities from the selected region are cut or copied. For example, all notes between A3 and C#3 with velocities greater than 100 and with durations above a half note can be extracted from a region. Here are some additional things you can do with Split Notes:

- Use an on-screen graphic keyboard to specify the pitches of notes you wish to split. This keyboard allows you to pick a non-contiguous range of pitches for splitting.
- Automatically Paste or Merge the split notes to a pre-existing track.

Basics

- Automatically create a new track and Paste the split notes to it.
- Automatically create a set of new tracks and Paste the split notes to each track according to their pitch.

Split Notes can be used to split a drum track into separate tracks, extract or double a melody line, separate one keyboard part into two to segregate right and left hand activity, pick out and double accented or long tones, and much more. See the hints at the end of this section for some unusual effects using the Split Notes command.

Split Notes is a highly specialized version of the Cut and Copy commands on the Edit menu. Only notes in the specified region and with specific properties are affected, other events are not affected. Each note is tested to see if it meets the requirements you specify, including velocity, pitch, and duration. They are then placed in a destination you select, such as the Clipboard or a new track. If cut, they are removed from the selected region.

- ☞ The Split Notes dialog box remembers the settings you last chose.

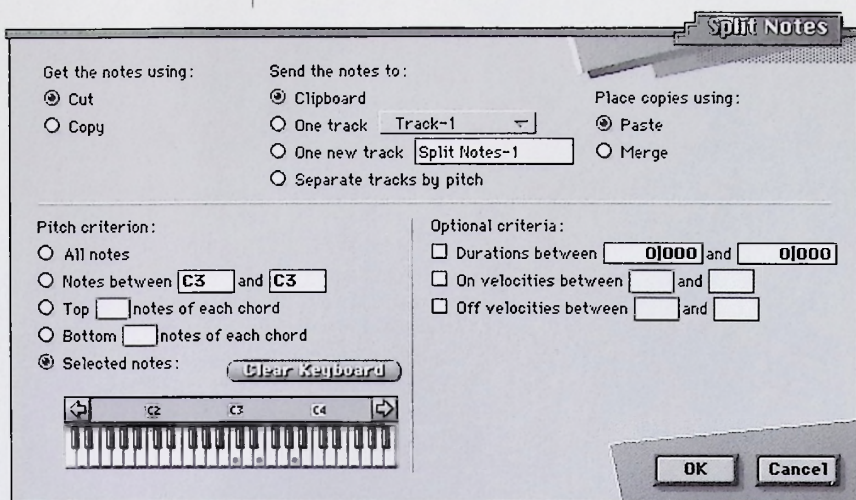
To use Split Notes:

- 1. Select the region you wish to modify.**

See the *Selecting a region* section earlier in this chapter.

- 2. Choose Split Notes from the Region menu.**

A dialog box appears.



3. Choose the Cut or Copy option at the top.

This determines whether notes are cut (removed from the originally selected region) or copied by the Split Notes command.

4. Choose a destination for the notes to be split.

You have several choices here. Select the *Clipboard* option to place notes on the Clipboard (for the purpose of pasting afterwards). Select the *One track* option and select a track name from the pop-up menu to send the notes to one existing track. Select the *One new track* option and type in a name or use the default name to send the notes to a new track that will be added to the bottom of your tracks list. Select the *Separate tracks by pitch* option to separate out the notes by pitch and place them into new, separate tracks. Each new track will contain the pitch name in parentheses after the track name. The track name used for this option can be entered in the *One new track* option text entry box above. This last option is ideal for splitting up a drum track into separate tracks.

5. Choose whether you would like the split notes to be pasted at their destination, which replaces what is already there, or merged together with what is already there.

6. Choose one of the five pitch selection options.

These options are discussed in detail in the next few sections.

7. Enter the data required by the option.

Type or play in the required values.

8. Click on the check box to the left of any desired options.

You can select a combination of pitch, velocity and duration options.

9. Press OK to confirm your choices or Cancel to cancel.

You can Undo and Redo the Split Notes command.

You can enter pitch and velocity values directly from your MIDI keyboard. The note you play will be entered directly into the value box which contains the flashing text cursor or is highlighted.

Cut or Copy

If you choose the Cut option, the Split Notes command will place the selected notes on the Clipboard and remove them from the selected region. If you choose the Copy option, the Split Notes command will place the selected notes on the Clipboard without removing them from the selected region.

All Notes

All notes will be cut or copied unless excluded by velocity or duration selections. Use this mode when you wish to cut or copy notes based solely on velocity or duration criteria.

Range of Pitches

All notes between the two entered pitch values will be cut or copied. The pitch range is inclusive (it includes the two entered pitch values and all notes between them). You must enter a pitch in each box for this option.

Top ____ notes

The specified number of notes from the top of each chord are cut or copied. A chord is defined as two or more notes which have the same attack times. If single notes are encountered (i.e. not in chords), they alone are copied to the Clipboard. It is useful to use the DeFlam command on the Region menu to make sure that attack times of all chords line up before using this option. Enter the number of notes to be cut or copied from the top of each chord in the box for this option.

Bottom ___ notes

Select Notes

This option is similar to *Top ___ notes* except that the notes are cut or copied from the bottom of each chord.

Click keys on the keyboard to select and deselect specific pitches. Click Clear Keyboard to clear the currently selected pitches on the keyboard. Use the scroll bar and scroll arrows to select pitches that are above or below those pitches which are currently displayed. You can also play keys on your MIDI keyboard (or other controller) to select and deselect specific pitches.

- ☛ The *Select notes* keyboard remembers the selected notes even when those notes are scrolled to the left or right and are not displaying. When you open the dialog and want to select some pitches on the keyboard and are not sure if there are selected notes above or below the pitches that are currently displayed, click Clear Keyboard to be sure that notes that are not displayed are also not selected.

The following are velocity and duration options that can be selected *in addition* to pitch options.

Durations

Notes in the selected region with durations within the specified range are cut or copied. You must enter two durations in the boxes from 0|001 to 9999|999. The duration range is inclusive (it includes the two entered duration values and all those between them).

On velocities

This option, when selected, allows only notes with the specified velocity range to be cut or copied from the selected region. You must enter two velocities (between 1 and 127) in the two boxes. The velocity range is inclusive (it includes the two entered values and all those between them).

Off velocities

This mode is similar to the On velocities mode except that notes with off velocities in the specified range are cut or copied.

Hints for Using Split Notes

The Split Notes command by itself is not always completely useful: it can be used in conjunction with other region commands and operations to fully accomplish an editing task. We therefore have included some effective ways to use the Split Notes command as part of more complex operations.

Splitting up a drum part into separate tracks

You can use the *Separate tracks by pitch* option in combination with the *Select notes* option to quickly explode tracks such as drum parts into separate tracks so that each pitch can be treated uniquely. This is great for being able to shift, quantize and otherwise edit a certain percussion instrument without affecting others.

Using a Temporary Track

You can process data independently that is cut or copied with the Split Notes by pasting it into another track. You can perform various operations on the data in the temporary track (transpose, velocity editing, etc.), then merge it back into the original track and delete the extra track.

Extracting a Lead Line

Extracting the lead line from a passage (perhaps from block chords where the top notes of each chord form a melody) can be easily done with the Split Notes command. After the lead line is separated from the chords, it can be modified (doubled, accented or otherwise enhanced) in an extra track.

To extract the lead line:

- 1. Select the region to extract the lead line from.**

See *chapter 25, "Selecting Regions"* for more information.

- 2. Choose Split Notes from the Region menu.**

The dialog box appears.

- 3. Choose the *Cut* option.**

This will remove the top note of each chord and place it on the Clipboard.

- 4. Choose the "One new track" option and type in a name for the new track to be created.**

- 5. Click the radio button next to the *Top ___ notes* option.**

- 6. Enter a value of 1 in the box for the option.**

This specifies that only the top note of each chord will be cut or copied.

- 7. Press OK to confirm your selections.**

Enhancing a Lead Line

The new track now contains the lead line. You can now use commands from the Region menu to modify the lead line.

Once you have the lead line separated out, you can change it in useful ways. Two suggested enhancements are doubling it an octave higher and increasing its velocity values. After you have made the modifications, you can merge the enhanced lead line back with the original material.

- 1. Extract the lead line as described above.**
- 2. Select the extra track which contains only the lead line.**
- 3. Enter Start and End times in the Edit bar of the Tracks window that will contain all notes in the lead line.**

These should be the same ones used with Split Notes above.

- 4. Choose a command from the Regions menu.**

To double the lead line an octave higher, choose Transpose. To give the lead line higher velocity values, choose Change Velocity.

- 5. Choose the options and values you want for the command and Press OK.**

For Transpose, enter an octave interval (C3 to C4). For Change Velocity, choose the *Add ___ to all* option and enter a value to increase the velocities by (try a value between 10 and 30).

- 6. Choose Copy from the Edit menu.**

This puts the modified lead line on the Clipboard.

- 7. Select the original track from which you extracted the lead line.**

Click on the track name to select the track.

- 8. Choose Merge from the Edit menu.**

The modified lead line is now part of the original passage.

- 9. Select the extra track containing only the lead line by clicking on it.**

Doubling Accented Notes

10. Choose Delete from the Tracks window mini-menu.

This gets rid of the extra track.

The enhancement is now complete.

A variation on the operation to double the lead line an octave higher is to double the bass line an octave lower. Use the *Bottom ___ notes* option and transpose it down an octave with the Transpose command.

Some variations on the operation to increase the velocity values of the lead line are as follows:

Make the notes of the chords softer (by decreasing their velocities) instead of the making the lead line louder. This would involve modifying the notes of the chords after you extracted the lead line from them and merging the (unaltered) lead line back with the modified chords.

Use the *Change to ___% of current value* option in the Change Velocity dialog box rather than adding a constant value to the lead line. This better preserves the dynamic contour of the lead line.

Leave the lead line on a separate track and play it back through another synthesizer as well as on the synthesizer playing back the chords. This highlights the lead line through timbral or tone color means.

This procedure allows you to split out only those notes which have a higher velocity in order to accent them.

1. Select the region containing the lead line.

See *Selecting a region* above.

2. Choose Split Notes from the Region menu.

The dialog box appears.

3. Choose the Copy option.

This will place the selected notes on the Clipboard.

Dividing a Keyboard Part Into Its Right and Left Hand Components

4. Choose the *All notes* option.

Click in the radio button next to the option.

5. Choose the *On velocities* option.

Enter a range of values that will separate out accented notes in the region.

6. Press OK to confirm your choice or Cancel to cancel.

7. Paste the Clipboard into a new track.

See the chapters on *Edit Commands* and *The Tracks Window* for help with this.

At this point, you can use other Region commands (such as Transpose) to enhance the accented notes. Alternatively, you can simply assign the track with only the accented notes to be played back on a separate channel by another synthesizer.

Sometimes, it is useful to be able to treat the left-hand and right-hand parts of a keyboard track separately. Performer does this automatically in the QuickScribe notation window. If you want, you can do it manually by following the earlier procedure for extracting a lead line but use the *Notes with pitches between ___ and ___* option. The pitches you enter should correspond with the range of either the right or left hand. Since this range is rarely consistent, you will probably have to organize your sequence into sections according to one hand's pitch range and use Split Notes on each section. You can then add a new track and paste the notes you've cut into it.

Chapter 28 *Region Commands 2*

Editing During Playback

Almost all of the editing operations discussed in this chapter and the next can be done while the music is playing back so that you don't have to stop and start the music to hear the result. For example, you could change note velocities in a track while the music is playing and then use the Undo/Redo command as the music continues playing to compare the original and modified data.

Selecting a Region

The commands in this chapter act on the a selected region in the Tracks List, the Tracks Overview, or one of Performer's three track edit windows. Without a selected region, the commands in this chapter do nothing. So be sure to learn how to select a region by reading chapter 25, "Selecting Regions". It contains many powerful shortcuts that will speed up your work.

The Continuous Data Commands

Continuous data is data which changes smoothly over time. The continuous MIDI data types include pitch bend, mono and poly key pressure and controller information. These types of data are output rather quickly, resulting in a large amount of data. Continuous data events are closely spaced, each specifying a slightly different value for the parameter which is changing. For instance, when you move a pitch wheel, a different pitch bend value might be sent every 20 ticks, resulting in 120 continuous data events per quarter note.

Continuous data is not really continuous at all: it is approximated by large numbers of events, each of which contain a small value change. When played back, they create a change that seems smooth and continuous. The closer together in time successive values are, the smoother the change will be. If the values are too close together, delays can occur due to the baud rate (data transfer speed) limit of MIDI transmission.

There are 16,384 different pitch bend values and 128 different controller and aftertouch values. Some synthesizers do not respond to every different pitch bend value: several successive values may produce the same effect. The response to different controller values may also be hard to hear. These facts may influence your decision

Types of Continuous Data

about how many continuous data events to store. Performer gives you the option to decrease or increase the number of continuous data events in a region.

The continuous data commands require you to specify the type of continuous data to be modified. The following is a description of the different types of continuous data and how they are produced.

Pitch Bend: On most synthesizers, this controller is a wheel, joystick or ribbon controller. When moved, it “bends” or varies the pitch either up or down depending on the direction of movement. Pitch bend data indicates the movement of the pitch bend device; it does not necessarily correspond to a musical interval. When played back, this data controls the sound module’s pitch bend device. Most synthesizers allow you to specify the interval by which a maximum pitch bend value will alter a pitch. Thus, moving the pitch bend device to its extreme high position can cause a pitch to be raised by an octave, a fifth or any other interval. All other pitch bend values are scaled according to the interval the maximum value produces.

Mono key pressure: Also known as aftertouch or channel pressure, this is a special kind of controller, putting out values between zero and 127. If you continue to press down a key after you play a note, mono key pressure information is sent. The harder you press, the higher the value. Mono key pressure is useful for things like changing the tone quality of a sound or controlling the amount and depth of vibrato.

Poly key pressure: This is similar to mono key pressure except that each key can generate its own pressure information, instead of one pressure level for the whole instrument based on the key most recently pressed. Poly key pressure therefore allows for much more subtle and complicated aftertouch effects. Since each key can have its own set of key pressure data, you must specify the note name by entering a pitch value when using the Poly key pressure option in the continuous data commands. You can enter the pitch directly from your MIDI keyboard. If you don’t specify a pitch, *all* keys will be affected by the command.

Controller: Foot pedals, wheels, sliders and breath controllers are common types of controller devices. Controllers are general purpose devices used to control such effects as vibrato and tremolo. They are identified by number; the number assigned to a specific controller depends on the synthesizer you are using. Continuous controllers (such as wheels and sliders) are generally numbered in the range zero to 63. Switch controllers (on-off types like a sustain pedal) use higher numbers. Synthesizers will often respond to more controllers than they have physical controls for.

When using the continuous data commands on controller data, you must specify the number of the controller whose data you wish to modify. This can be done by clicking in the box next to the controllers option and moving the correct controller on your MIDI input keyboard.

Thin Continuous Data

Synthesizers tend to send continuous data as fast as they possibly can. If you record several tracks of this and play them all back at once, Performer, your synthesizers, or MIDI itself may bog down. The Thin Continuous Data command selectively removes continuous data events, "thinning out" the amount of continuous data while retaining all of its essential characteristics. This allows you to transmit a reasonable amount of continuous data that can be handled easily by all components of your MIDI system.

Basics

The Thin Continuous Data command actually determines the contour of the continuous data in the selected region. The continuous data in this region is erased and new continuous data is generated. This new data is more sparse, reconstructing the analyzed contour with fewer events. Unless musically necessary, successive continuous data events will not occur closer together than the minimum time change and will not differ in value from adjacent events by less than the minimum value change.

Since the continuous data is regenerated, it is possible that this command will thicken the data instead of thinning it. You may find this aspect of the command useful if you have thinned out the data too much.

Using Thin Continuous Data

The appropriate minimum time change depends on the tempo of the sequence and the controller device involved. Generally, a value of 10 to 20 will work well. The minimum value change should be 1 for controllers and 4 to 8 for pitch bend. Experimentation is essential to find the best values in each instance.

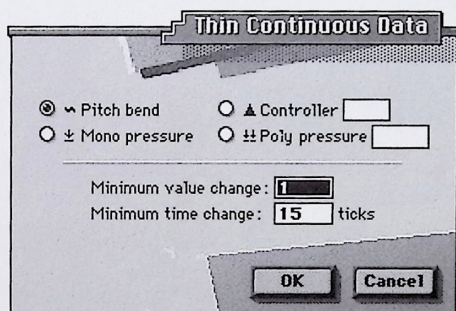
To use Thin Continuous Data:

1. Select the region you wish to modify.

See *Selecting a region* in the *Region Commands 1* chapter.

2. Choose Thin Continuous Data from the Region menu.

A dialog box appears.



3. Choose the type of data you wish to thin out.

Click in the radio button next to the type you want: Pitch Bend, Mono Key Pressure, Poly Key Pressure or Controller. See *The types of continuous data* above for an explanation of each type.

4. Specify a minimum time change.

Click in the box for this parameter and type in a value between zero and 999.

5. Specify a minimum value change.

Click in the box for this parameter and type in a value.

Create Continuous Data

Basics

6. Press the OK button to confirm your entry or the Cancel button to cancel it.

You can Undo and Redo the Thin Continuous Data command.

After you OK this command, it may take some time to carry out the change. If you wish to terminate the command while it is working, press the Command and period keys together.

The Create Continuous Data command creates a stream of continuous data events that change smoothly over time. You can use it to create pitch bends, crescendos and diminuendos, filter sweeps and many other effects.

This command creates continuous data events that change smoothly between the starting and ending values. All values must be within the range zero to 127, except for pitch bend data which is in the range -8192 to 8191.

The contour of the changing values is controlled by the curvature parameter. It allows you to “weight” the change. With a curvature of zero, the change is linear from the first to the second entered value. The more you increase the value positively (with values from 1 to 99), the more the change will take place towards the end of the region. The more you increase the value negatively (with values from -1 to -99), the more the change will take place towards the beginning of the region.

The number of events generated are controlled by the minimum time change and the minimum value specified: all events created will not be any closer together than the minimum time change and they won't be separated by values smaller than the minimum value change. Though Performer can create a perfectly smooth set of values, the actual result may not be perfectly smooth due to the minimum time and value changes you enter. Experimentation is the key to good results.

You can Undo and Redo the Create Continuous Data command.

Using Create Continuous Data

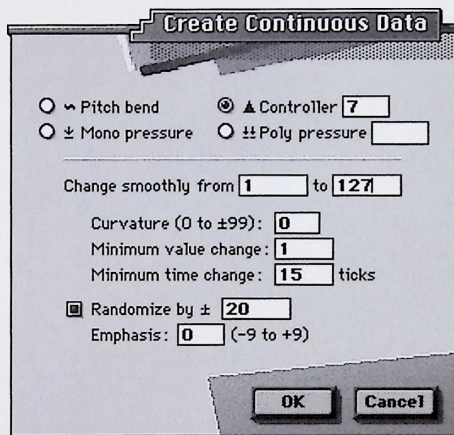
To use Create Continuous Data:

1. Select the region you wish to modify.

See *Selecting a region* in the *Region Commands 1* chapter.

2. Choose Create Continuous Data from the Region menu.

A dialog box appears.



3. Choose the type of data you wish to create.

Click in the radio button next to the type you want: Pitch Bend, Mono Key Pressure, Poly Key Pressure or Controller. See *The types of continuous data* above for an explanation of each type.

4. Specify start and end values for the data.

The data created will have values ranging smoothly between the start and end values.

5. Specify a minimum time change.

Click in the box for this parameter and type in a value between zero and 999.

Using the Randomize Option

6. Specify a minimum value change.

Click in the box for this parameter and type in a value between zero and 127.

7. Press the OK button to confirm your entry or the Cancel button to cancel it.

After you OK this command, it may take some time to carry out the change. If you wish to terminate the command while it is working, press the Command and period keys together.

Any existing data of the type being created in the selected region is removed.

See the *Basics* section of the *Thin Continuous Data* command above for suggestions on setting the minimum time and value change parameters.

The Randomize option allows you to generate variability in continuous data that you create, as apposed to a perfectly smooth line or curve. Doing can introduce can add extra feel and depth to the musical effect you are creating with the continuous data.

Notice that the Randomize option is a check box, which means that it can be used with any of the radio button options above. Check the box to randomize; uncheck it for no randomization.

When this command randomizes, it chooses random values within the range that you specify. Each continuous data event is first generated by the rest of the parameters above, and then the event's value is randomized within the range you specify in the range box. The result is a curve or line that is not perfectly straight:

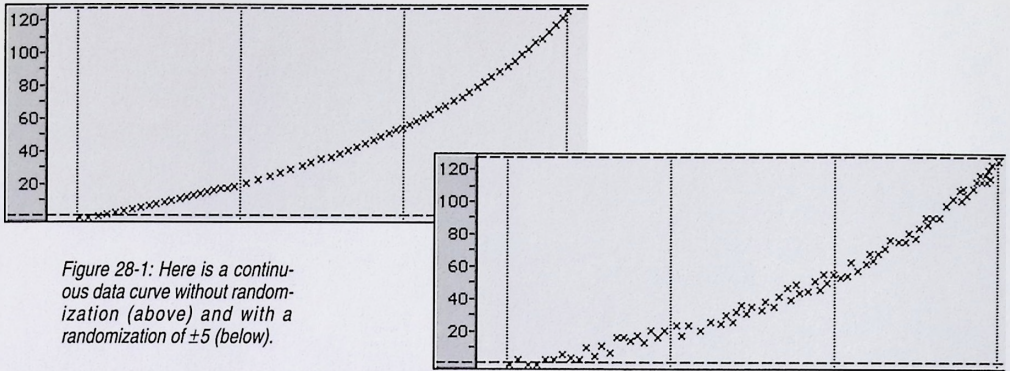


Figure 28-1: Here is a continuous data curve without randomization (above) and with a randomization of ± 5 (below).

The Emphasis sub-option causes the tendency of the randomization to be higher or lower within the specified range. Thus, if you wish to randomize the continuous data events within a certain range, but you wish them to tend to be higher, use a positive emphasis; use a negative emphasis if you wish them to tend to be towards the lower end of the range. A value of zero equals no emphasis, which causes the randomization to occur evenly within the range.

With the Change Continuous Data command, you can modify existing continuous data by scaling it or limiting it to a specific range.

To use Change Continuous Data:

1. **Select the region you wish to modify.**

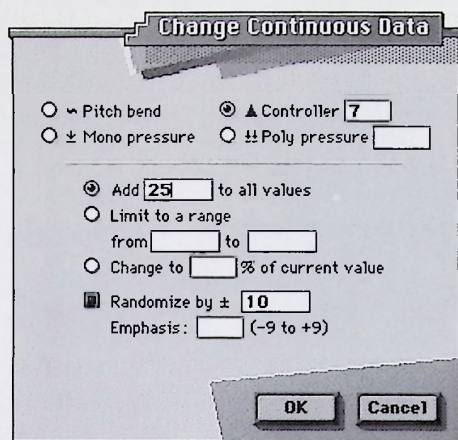
See *Selecting a region* in the *Region Commands 1* chapter.

2. **Choose Change Continuous Data from the Region menu.**

A dialog box appears.

Change Continuous Data

Using Change Continuous Data



3. Choose the type of data you wish to change.

Click in the radio button next to the type you want: Pitch Bend, Mono Key Pressure, Poly Key Pressure or Controller. See *The types of continuous data* above for an explanation of each type. Only the type of data you select will be changed.

4. Choose the change option you want.

Click in the radio button next to the option.

5. Enter the value required by the option.

Click in the box for the option and type in the value you want. You may select only one option.

6. If you would like to randomize the data, check the Randomize check box and enter a Randomization range and emphasis.

For more information about these options, see "Using the Randomize Option" on page 457, as this option works the same as the Randomize option in the Create Continuous data command, except that it changes existing data rather than newly created data.

7. Press the OK button to confirm your entry or the Cancel button to cancel it.

Add ___ to all values

**Limit to a maximum
of ___**

**Limit to a minimum of
___**

**Set to ___% of current
value**

Reassign Continuous Data

Using Reassign Continuous Data

You can Undo and Redo the Change Continuous Data command.

The entered value is added to all continuous data in the selected region. Enter a positive number if you wish to increase the values in the region or a negative number if you wish to decrease them. If a value exceeds the limit of its data type, it will be truncated at the limit value (e.g. if a pitch bend value comes out to -10,150, it will become -8192, the minimum limit for pitch bend values).

Events in the selected region whose values are greater than the entered value are changed to the maximum value.

Events in the selected region whose values are less than the entered value are changed to the minimum value.

The values of all events in the selected region are scaled by the entered percentage value. Thus, specifying 50% halves the values, while 200% doubles the values. If a value exceeds the limit of its data type, it will be truncated at the limit value (e.g. if a pitch bend value comes out to -10,150, it will become -8192, the minimum limit for pitch bend values).

With the Reassign Continuous Data command you can convert one type of continuous data into another. For example, you can convert pitch bend data into modulation wheel data. This command is very useful for changing the controller number of continuous data when playing back a sequence on a different synthesizer than the one it was recorded with.

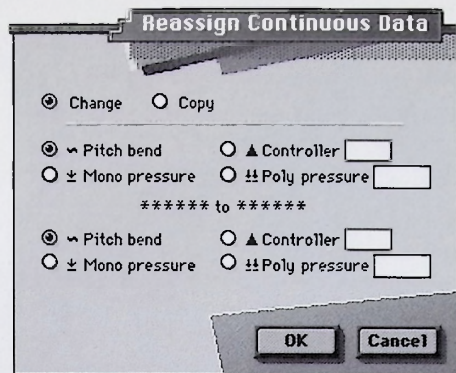
To use Reassign Continuous Data:

1. Select the region you wish to modify.

See *Selecting a region* in the *Region Commands 1* chapter.

2. Choose Reassign Continuous Data from the Region menu.

A dialog box appears.



3. Choose either the Change or Copy option.

Click in the radio button next to the option. The Change option changes data from one type to another. The Copy option makes a copy of the data in the same track of the new type you specify.

4. Enter the type of continuous data to be changed.

Click on the appropriate radio button.

5. Enter the type of continuous data you wish it to be changed to.

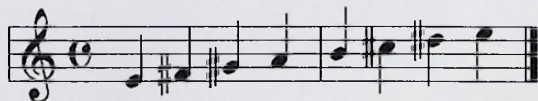
Click on the appropriate radio button.

6. Press OK to confirm your entry or Cancel to cancel it.

You can Undo and Redo the Reassign Continuous Data command.

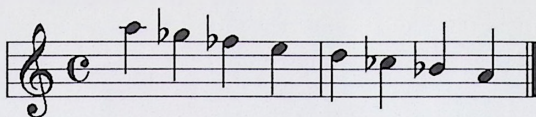
Invert Pitch

The Invert Pitch command inverts or flips notes around a specified axis. The inversion is chromatic, that is, exact. For example, if the following E major scale (starting on E3),

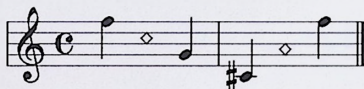


Basics

is inverted around an axis of D3, the following will result:



Inversion is an operation in which the interval between a note and the inversion axis pitch is measured and the note is transposed the same interval on the opposite side of the axis pitch. Two examples are shown below: If the note to be inverted is F4 and the axis pitch is C4, the interval between them is a perfect fourth. Since F4 is above C4, it will be transposed down by the same interval, a perfect fourth, resulting in a G3. If the note to be inverted is C#3 and the axis pitch is A3, the resulting pitch would be F4. In the following picture, the axis pitch in each measure is represented by a diamond:



The inversion is always exact, transposing the note the same chromatic interval above or below the axis pitch.

Using Invert Pitch

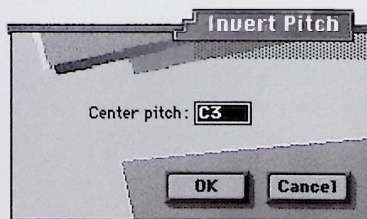
To use Invert Pitch:

1. **Select the region to be inverted.**

See *Selecting a region* in the *Region Commands 1* chapter.

2. **Select Invert Pitch from the Region menu.**

A dialog box appears.



Hints

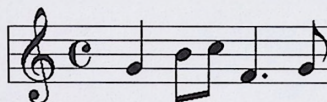
3. Enter the axis pitch for the inversion.

You can use your MIDI keyboard for input. This is the center pitch around which the inversion will take place.

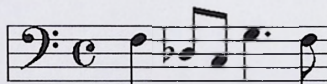
4. Press OK to confirm your entry or Cancel to cancel it.

You can invert a region of notes around a pair of axis pitches. Follow the above procedure for normal inversion specifying the lower of the two pitches in the Invert Pitch dialog box. Then use the Transpose command on the Region menu to transpose the region by the interval between the two axis pitches.

Example: You wish to transpose the following passage around the axis pitch pair C3 and E flat 3.

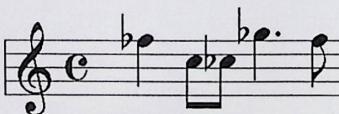


Use Invert Pitch on the passage specifying C3. The following is the result:



Select the region containing the passage and use the Transpose command on the Region menu transposing from C3 to E flat 3 (a minor third, the interval between the two axis pitches).

This is the final result, inverted correctly around the pair of axis pitches:



Reverse Time and Retrograde

The Reverse Time and Retrograde commands reverse the order of events in a selected region. However, each command reverses notes in a slightly different way, producing much different results.

Reverse Time

Reverse Time reverses the order of notes' attack times in a region. A note whose attack occurs two beats from the beginning of the region is moved so that its attack occurs two beats before the end of the region. In doing so, Performer either maintains the note's duration or ends the duration just before the next attack. Notice in the example below that Reverse Time places the attack of the first note exactly at the end of the region, extending the duration into the next bar.

Retrograde

Retrograde inversion simply reverses the order of notes within the region: the first note becomes the last note, the last note becomes the first note, and so on. This is analogous to playing a tape backwards and recording the result.

Original phrase

Reverse Time

Retrograde



Note: for clarity, we have shortened the durations in the Reverse Time example so that they don't extend beyond the next attack. In actuality, the notes maintain their original durations after being reversed.

To get an exact reversal of the notes, you have selected a *region of time*, rather than specific events. In addition, the region of time must include the duration of the last note in the region. In the example above, the last note is the sixteenth note, G4. To obtain the results shown on the bottom staff, you would have to select the region from 1|1|000 to 2|1|000, where 2|1|000 takes into account the duration of the G4 sixteenth note.

To specify a region of time that includes the final duration, select the region using the Edit bar in the Tracks window, or by dragging in the Time Ruler of the Graphic Editing window or Tracks Overview. Selecting specific events won't work because the duration of the final note is not included. (For example, if you selected the original phrase above in the Event List, the end of the region would be 1141361 instead of 2111000.

Using Reverse Time

To use Reverse Time, you can select the notes in any fashion:

1. **Select the region you wish to modify.**

See *Selecting a region* in the *Region Commands 1* chapter.

2. **Choose Reverse Time from the Region menu.**

You can Undo and Redo the Reverse Time command.

Using Retrograde

When using the Retrograde command, you must select a region using the edit bar in the Tracks window. The Retrograde command will have no effect on data that has been highlighted in an Event Editing window.

1. **Select the region you wish to modify.**

See *Selecting a region using the Tracks window* in the *Region Commands 1* chapter.

2. **Choose Retrograde from the Region menu.**

You can Undo and Redo the Retrograde command.

Scale Time

The Scale Time command expands or compresses the duration of events in the selected region by the specified ratio. This effectively changes the distance between notes, making them closer together or farther apart. Since the actual duration of events changes, the region will become smaller or larger after this command is invoked.

Basics

Scaling time allows you to double, halve or otherwise alter the amount of time an event takes. A wide range of compression or expansion of the duration of events is possible. The amount of change to the duration is specified by an integer ratio, e.g. 3:2. If the first number in the ratio is larger than the second, the region is

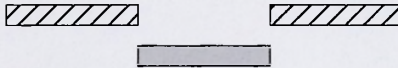
expanded; if the first number is smaller than the second, the region is compressed. A ratio of 2:1 doubles the duration of all events in the region (and doubles the length of the entire region as well); a ratio of 1:2 halves the duration of all events in the region.

Events at the Start time of the region will remain in place. Since the overall length of the region changes, events at the end will be moved. If the end of the region expands, events in it will be merged with data already there.

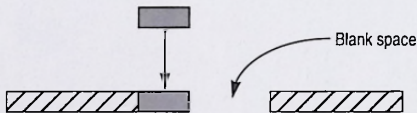
Original selected region:



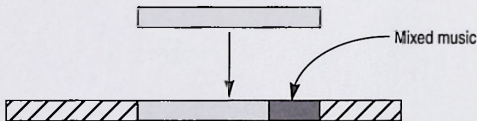
Scale Time cuts the selected region...



...and then compresses and merges...



...or expands and merges.



All MIDI data events are scaled. The Scale Time command does not affect loops or any event in the Conductor track.

To use Scale Time:

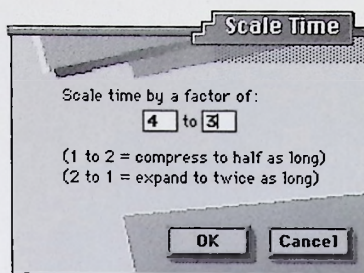
1. Select the region you wish to modify.

See *Selecting a region* in the *Region Commands 1* chapter.

2. Choose Scale Time from the Region menu.

A dialog box appears.

Using Scale Time



3. Enter the ratio values.

The values must be between 1 and 99.

4. Press the OK button to confirm your entry or the Cancel button to cancel it.

Examples

Here are three examples to give you a better idea of the use of Scale Time:

You've entered a melody in eighths but decided it would sound better in sixteenths. Select the region of the melody and use Scale Time with a ratio of 1:2.

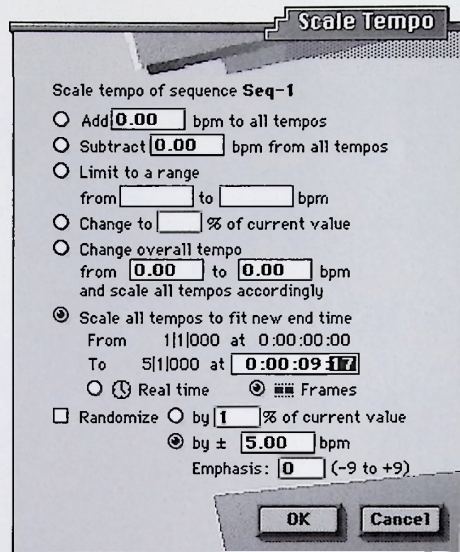
Your sequence is in 4/4 time with lots of triplets. You want to modify it to be in 12/8, converting the triplets to regular eighths. Select the entire sequence. Use Scale Time with a ratio of 3:2. Afterwards, change the meter and tempo appropriately.

You've entered a melodic idea in quarter notes and decide that it should actually be the bass line for the sequence. All notes should be whole notes. Select the region with the melody and use Scale Time with a ratio of 4:1. Then transpose it down to the correct octave.

Scale Tempo

The scale tempo command provides several ways to modify existing tempos within a selected region in the Conductor track of a sequence or song. It modifies existing tempo events within the region, but it does not generate new tempo events. (To do so, use the Change Tempo command in the Change menu.) The Scale Tempo command is ideal for making global changes to an existing tempo map that you have already created with the Change Tempo command. For

example, you might have created an elaborate tempo map with many tempo nuances, and you would like to increase the overall tempo while maintaining the nuances.



Selecting a Region to Scale

The Scale Tempo command requires that you select the tempo events you wish to scale in the Conductor track before you select the command from the Region menu.

- ☛ Note that the Scale Tempo command only affects tempo events that already exist in the Conductor track. If the region you select has no tempo events in it, this command will have no effect. If so, use the Change Tempo command in the Change menu to generate tempo events.

There are several ways to select a region in the Conductor track. For more information, see chapter 25, "Selecting Regions".

Once you have selected the tempo events you wish to scale:

1. Choose Scale Tempo from the Region menu.

Add ___ bpm to all tempos

Subtract ___ bpm from all tempos

Limit to a range from ___ to ___

Change to ___ % of current value

Change overall tempo from ___ to ___ and scale accordingly

Scale all tempos to fit new end time

2. Select the desired scaling option.

Each scaling option is discussed below.

3. Click OK to confirm your choice or Cancel to withdraw it.

This option adds the number of beats per minute (bpm) you enter to each tempo event within the selected region.

This option subtracts the number of beats per minute (bpm) you enter from each tempo event within the selected region.

This option searches for tempo events above or below the specified range. When it finds one, it changes the tempo to fall within the range. For example, if the tempo range is from 200 to 300, a tempo of 351 would be changed to 300 and a tempo of 60 would be changed to 200.

This option increases or decreases each tempo event by a percent of its current value, where the current value is 100%. Use a percentage lower than 100% to slow down the tempo; use a value above 100% to raise it. Use this option when you wish to maintain the degree of change between tempos within the tempo map when you raise or lower it.

This option scales the tempo events by a percentage, just like the option above it. However, it lets you specify the change in beats per minute (bpm) rather than as a percentage. For example, suppose you have a piece of music with varying tempos, but whose approximate tempo is 80 bpm. You simply wish to change it's overall tempo from around 80 bpm to around 96 bpm. Rather than figuring out what percent to type in the percentage option to achieve this change, you can use this option to type in the original approximate tempo of 80 bpm and the desired increased tempo of 96 bpm, and let Performer figure out the percent increase for you. All in all, this option provides a more musical way of specifying a percent by which you wish to scale the tempos, even though it accomplishes the same thing as the "scale by percent" option.

This option scales all existing tempo events to increase or decrease the overall elapsed time of the selected region. The start time of the region is fixed, and the end time can be made earlier or later. Times can be expressed in real time or SMPTE frame time. Here is an



Randomize

example: suppose that you have created a sequence with many tempo changes, and it is around 3 minutes long. But you would like to make it 3 and a half minutes long. This option lets you select the three minute region and scale all the tempos so that it stretches out evenly to 3 1/2 minutes.

Here's another example: suppose you are locking a sequence to picture via SMPTE time code. You have composed a section of music, and you've programmed all of the tempo changes. You've got the section starting at the correct frame time, but it ends with a hit that is off by several frames. With this scale tempo option, you can select the region with the hit as the end time of the region, choose scale the tempos, and type in the new end time where the hit should occur, changing the elapsed time such that the hit lands at the correct frame.

The randomize option is a check box option that works in conjunction with the radio button option selected above.

The randomize options are explained below.

By ___ % of current value

This option randomizes the tempo of each selected tempo event within a range that is expressed as a percentage of the tempo value. For example, if the tempo is 100 bpm, and you enter 10 percent, the tempo will be randomized within a range between 90 to 110 bpm (± 10 bpm).

By \pm ___ bpm

This option randomizes the tempo of each selected tempo event within a range of beats per minute.

Emphasis

This sub-option causes the tendency of the randomization to be higher or lower within the specified range. Thus, if you wish to randomize the tempos within a certain range, but you wish them to tend to be higher, use a positive emphasis; use a negative emphasis if you wish them to tend to be towards the lower end of the range. A value of zero equals no emphasis, which causes the randomization to occur evenly within the range.

Chapter 29 *Transpose*

Performer's Transpose command, found in the Region menu, transposes the pitches of all notes in a selected region. With it you can:

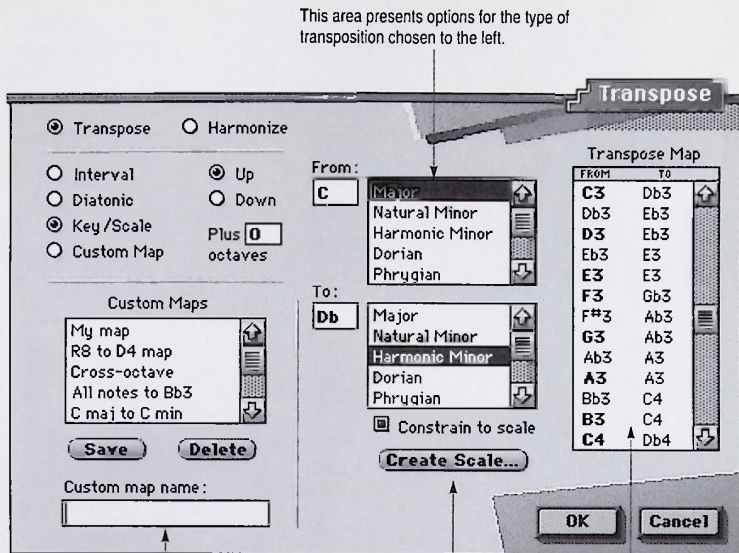
- transpose by interval
- transpose diatonically to create harmonies
- change key from any root to any other
- change key from any mode to any other
- map each pitch to any other pitch for mapping drum track note assignments from one drum machine to another
- transpose using scale sizes larger or smaller than 12 notes
- transpose up or down, by any number of octaves
- create and save custom transpose maps
- create and save custom scales or keys

When performing the above operations, you can:

- play in pitches or entire scales from your MIDI keyboard when setting up the transposition
- Undo and Redo the Transpose command

Quick Reference

The Transpose dialog box provides several ways of transposing, options for each type, a Transpose Map that shows you how each pitch will be changed, and a Custom Maps list which can save transposition maps.



Once you have set up a transposition, you can save it by typing in a name and clicking Save; it will then appear in the list. You can use the transposition map at any time by clicking its name.

Create your own types of scales with the custom scales command.

The Transpose Map changes dynamically to reflect the transposition or custom map you have chosen to the left. You can pop-edit pitches in the To column to create a custom map. Changes in one octave are reflected in all other octaves.

Harmonizing instead of Transposing

The Transpose Map is discussed next, and the four types of transposition are described in following sections.

The Transpose dialog box allows you to either transpose or harmonize. The Harmonize option copies the original notes, transposes the copied notes, and the merges them together with the original notes. This allows you to build harmonies quickly.

The Transpose Map

The Transpose Map displays a scrolling list of all 128 MIDI notes in a column on the left and the pitch to which each will be transposed in a column on the right. Notes and spellings in the map change dynamically according to the transposition options that you choose. In addition, you can pop-edit values directly in the Transpose Map list as shown below to further modify the map. Changes in one octave are reflected in all other octaves.

The screenshot shows the 'Transpose Map' window. It contains a table with two columns: 'FROM' and 'TO'. The 'FROM' column lists MIDI notes from C3 to C4. The 'TO' column lists the transposed notes. The note Gb3 is highlighted in the 'TO' column. To the right of the table is a vertical scroll bar. Annotations with arrows point to various parts of the interface:

- When the Diatonic or Scale/Key transpose option is selected, scale steps in the source key are displayed in boldface. (Points to the 'FROM' column)
- Changes in each octave are reflected in all other octaves as well. (Points to the scroll bar)
- You can customize the transposition by pop-editing destination pitches to change them. Use the up/down arrow keys to scroll through the list. You can play pitches in the pop-up box from your MIDI keyboard. (Points to the 'TO' column)
- View other octaves by using the scroll bar. (Points to the scroll bar)

FROM	TO
C3	Db3
Db3	D3
D3	Eb3
Eb3	Eb3
E3	E3
F3	Gb3
F#3	G3
G3	Ab3
Ab3	Ab3
A3	A3
Bb3	Cb3
B3	C4
C4	Db4

As soon as you pop-edit a pitch in the Transpose Map, thus modifying it from the way it was originally set up by the transpose options, the Custom Map transpose option will then become automatically selected to indicate that the transpose map is now a custom map.

Playing In Pitches From Your MIDI Controller

When pop-editing the Transpose Map, you can play in individual pitches or an entire scale from your MIDI controller. To play in a scale, double-click the first pitch to pop-edit it and then play the scale. As you play, each pitch gets entered into the current pop-up box, which then automatically scrolls down to the next note in the list and enters the next pitch you play. If you make a mistake, use the up and down arrow keys to move the pop-edit box.

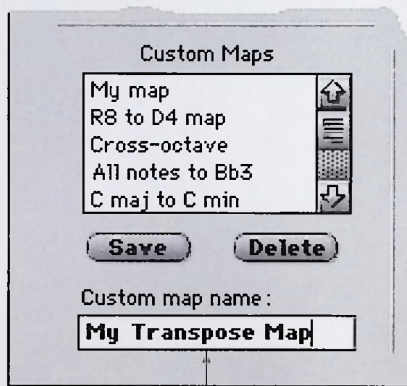
When you are using the Custom Map option, Performer provides another intuitive way for you to play in pitches from your controller:

1. **Select the Custom Map option.**
2. **Hold down the pitch you wish to transpose, and while holding it down, play the pitch you wish to transpose it to.**

You DO NOT need to pop-edit any values to do this.

Saving a Transpose Map

If you would like to save a transpose map, type in a name for it and click Save as shown below. Custom maps are saved with the file and can be loaded into other files with the Load command in the File menu.



To save a transpose map, type in a name and click Save.

Using Transpose Maps

To recall the map, select its name in the list. To remove a Custom Map from the list, click its name and click Delete.

To make changes to an existing map:

1. **Select the existing map in the list.**
2. **Make your changes to the Transpose Map.**
3. **Click Save.**

The changes you made will be saved to the map.

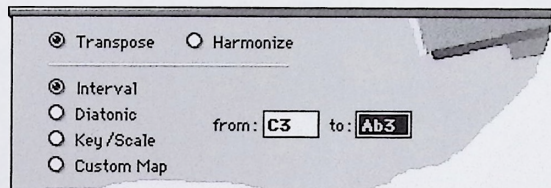
To create a new map based on an existing map:

1. **Select the existing map in the list.**
2. **Type in a new name.**
3. **Click Save.**

The new map will appear in the list.

4. **Edit the Transpose Map to make your changes.**
5. **Click Save to save the changes you have made.**

Transposing by Interval



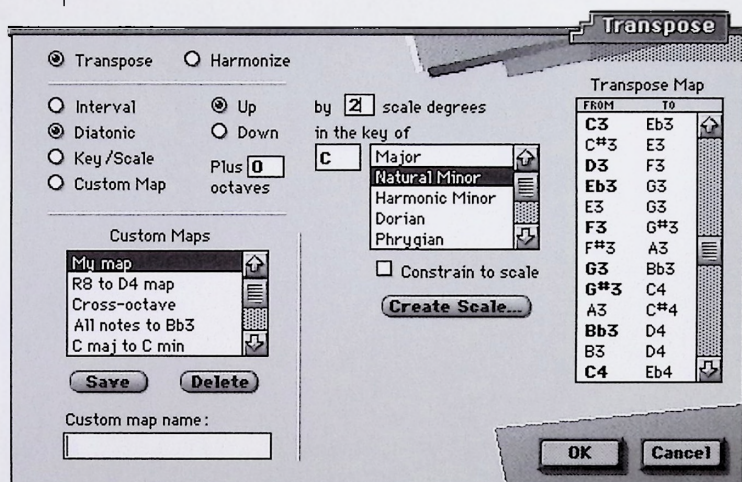
Transposing by *Interval* is chromatic, exact transposition: pitches are shifted by the number of semitones in the interval that you choose. Literally, it causes a mass shift of all pitch values in the selected region, just like dragging notes up or down in the Graphic Editing or QuickScribe notation windows. For example, chromatically transposing from C3 to E3 causes all pitches to shift up a major third (four semitones).

The only option for this type of transposition is the *from* and *to* pitches that define the interval. The notes that you enter to define the interval are not important: only the interval between them matters. For example, instead of entering C3 to E3 to shift notes up a major third, you could enter F3 to A3.

The two pitches entered also define the direction of transposition. If the second pitch is above the first pitch, pitches will be transposed up. If the second pitch is below the first, pitches will be transposed down.

Transposing Diatonically

Having chosen an interval, you can pop-edit the transpose map to make modifications to it if you like. As soon as you pop-edit a pitch in the Transpose Map, thus modifying it from the way it was originally set up by the *Interval* transpose options, the *Custom Map* transpose option will then become automatically selected to indicate that the transpose map is now a custom map.



Diatonic transposition transposes notes by a number of scale steps within the type of scale that you choose. For example, if you transpose up 2 scale steps in the key of C minor as shown in the above example, all C naturals (the root) will be transposed up two steps to E flat (a third). Notice that the number of scale degrees, 2 in this example, refers to *the number of scale steps to change by*; it does not refer to the destination scale step.

This is extremely useful for quickly creating harmonies. For example, as shown above you can copy and paste a melody line into another track and transpose it diatonically up a third (two scales degrees) to harmonize with the melody. Scale tones in the key you choose are displayed in boldface in the transpose map column.

To Transpose diatonically:

- 1. Choose the Diatonic option.**
- 2. Choose the direction (Up or Down) and number of octaves.**
- 3. Type or play in the key root pitch and select a mode from the list.**

This sets up the Transpose Map. You can play in the root pitch from your MIDI keyboard if you place the insertion point in the From text box.

- 4. If you would like to transpose all non-scale pitches into the nearest scale pitch, select the Constrain to scale option.**
- 5. If you would like to customize the transposition, pop-edit values in the Transpose map.**

As soon as you pop-edit a pitch in the Transpose Map, thus modifying it from the way it was originally set up by the *Diatonic* transpose options, the *Custom Map* transpose option will then become automatically selected to indicate that the transpose map is now a custom map.

- 6. Click OK.**

The Up and Down options determine the direction of transposition, and the Plus *n* octaves option allows you to transpose by intervals greater than one octave.

Remember that the key you choose is a way of setting up the diatonic transposition in the Transpose Map. Performer doesn't really "know" what key the actual data is in. In fact, just about any musical phrase can be described in musical terms as being in one of several different, but related, keys. So, when transposing diatonically, it is up to you to know which key to choose to get the results that you want.

The above also holds true for how notes get spelled. The key that you choose only affects the spellings in the Transpose Map: it will not change the spellings of the actual track data. Track note data spellings are controlled by the current key signature in the Conductor track.

The Constrain to Scale Option

The Constrain to scale option is available with the Diatonic and Key/Scale transpose options. If enabled, it causes all non-scale tones to be transposed to the nearest appropriate scale tone, as shown below:

Transpose Map		Transpose Map	
FROM	TO	FROM	TO
C3	E3	C3	E3
Db3	E3	Db3	F3
D3	F3	D3	F3
Eb3	F#3	Eb3	G3
E3	G3	E3	G3
F3	A3	F3	A3
F#3	Bb3	F#3	B3
G3	B3	G3	B3
Ab3	B3	Ab3	C4
A3	C4	A3	C4
Bb3	Db4	Bb3	D4
B3	D4	B3	D4
C4	E4	C4	E4

☐ Constrain to scale ☒ Constrain to scale

Transposing by Key/Scale

Transpose

☒ Transpose ☐ Harmonize

☐ Interval ☒ Up
☐ Diatonic ☐ Down
☒ Key/Scale Plus octaves
☐ Custom Map

Custom Maps

- My map
- R8 to D4 map
- Cross-octave
- All notes to Bb3
- C maj to C min

Save Delete

Custom map name:

From: C Major
 Natural Minor
 Harmonic Minor
 Dorian
 Phrygian

To: Db Major
 Natural Minor
 Harmonic Minor
 Dorian
 Phrygian

☒ Constrain to scale Create Scale...

Transpose Map

FROM	TO
C3	Db3
Db3	Eb3
D3	Eb3
Eb3	E3
E3	E3
F3	Gb3
F#3	Ab3
G3	Ab3
Ab3	A3
A3	A3
Bb3	C4
B3	C4
C4	Db4

OK Cancel

Transposing by *Key/Scale* transposes notes from one key to another. For example, you can change music that is currently in a major key to its corresponding minor key. In the above example, notes in the key of C major are being transposed down to a entirely different root

and key: E Mixolydian. The Transpose Map shows each note in the key of C Major on the left and the pitch each will be transposed to in the key of Db Harmonic Minor.

To Transpose by key:

- 1. Choose the Key/Scale option.**
- 2. Choose the direction (Up or Down) and number of octaves.**
- 3. Type or play in the source key root pitch and select a mode from the top list.**

This sets up the From column in the Transpose Map. You can play in the root pitch from your MIDI keyboard if you place the insertion point in the From text box.

- 4. Type or play in the destination key root pitch and select a mode from the bottom list.**

This sets up the To column in the Transpose Map.

- 5. If you would like to transpose all non-scale pitches into the nearest scale pitch, select the Constrain to scale option.**
- 6. If you would like to customize the transposition, pop-edit values in the Transpose map.**

As soon as you pop-edit a pitch in the Transpose Map, thus modifying it from the way it was originally set up by the *Key/Scale* transpose options, the *Custom Map* transpose option will then become automatically selected to indicate that the transpose map is now a custom map.

- 7. Click OK.**

The Up and Down options determine the direction of transposition, and the Plus ___ octaves option allows you to transpose by intervals greater than one octave.

Remember that the source and destination keys that you choose are a way of setting up the diatonic transposition in the Transpose Map. Performer doesn't really "know" what key the actual data is in. In fact, just about any musical phrase can be described in musical terms as

Transposing Using a Custom Map

Custom Transposing Based on Another Transposition

being in one of several different, but related, keys. So, when transposing by key, it is up to you to know which key to choose to get the results that you want.

The above also holds true for how notes get spelled. The key that you choose only affects the spellings in the Transpose Map: it will not change the spellings of the actual track data. Track note data spellings are controlled by the current key signature in the Conductor track.

The Custom Map option allows you to do several things. You can:

- create a customized map that is based on one of the other transpose options
- transpose using octave ranges other than 12 halftones
- map each note to any other note
- map all notes to a single pitch

Each of these operations are discussed below.

Often you may want to slightly modify a transposition set up by one of the first three transpose options. For example, you may want to transpose diatonically up two scales steps except for each A-flat, which you would like to maintain as an A-flat. In this case, you can set up the Diatonic transposition and then pop-edit the destination pitch for A-flat so that it doesn't change pitch.

To create a customized map that is based on the Interval, Diatonic, or Key/Scale Transpose options:

1. Choose the Transpose option you would like to base your custom map on.

Set up the parameters for the option as necessary.

2. To customize the transposition, pop-edit values in the Transpose map as needed.

As soon as you pop-edit a pitch in the Transpose Map, thus modifying it from the way it was originally set up by the transpose options, the *Custom Map* transpose option will then become automatically selected to indicate that the transpose map is now a custom map.

Custom Transposing With a Non-standard Octave Range

3. If you would like to save the map, type in a name and click Save.

The map will appear in the Custom Maps list.

4. Click OK to execute the transposition.

Interval, Diatonic, and Key/Scale transpose options all set up the transpose map in 12 note octaves. Changes in one octave are reflected in all other octaves. The Custom Map option can set up the transpose map in octaves that are more or less than 12 notes. For example, if you have a sampler that has drum pitched drum sounds like tom-tom drums every 6 notes, you can transpose that 6-note range to the 10-note range of another sampler. Or, you can transpose music from a 12-tone synth to a synth that is tuned in quarter-tones.

The Custom Transpose option frees you from the octave and diatonic restrictions of the other transpose options.

To transpose using an custom octave range:

1. Select the Custom Map transpose option.

The Custom Transpose options will appear.

Transpose Map

☐ Interval
☐ Diatonic
☐ Key/Scale
☒ Custom Map

From: 12 notes starting at C3
 To: 24 notes starting at d3

FROM	TO
C3	D3
Db3	E3
D3	F#3
Eb3	Ab3
E3	Bb3
F3	C4
F#3	D4
G3	E4
Ab3	F#4
A3	Ab4
Bb3	Bb4
B3	C5
C4	D5

2. Type in the number of notes in the source and destination octaves and a root pitch for the initial octave.

In the example above, a standard 12-note octave is being mapped to a 24-note octave. The scale sizes can be any number between 1 and 128. The root pitches can be any note. Notice that the source octave from C3 to C4 gets mapped to the destination two-

Transposing All Notes to a Single Pitch

octave range of D3 to D5. Also notice that the root pitches do not need to be the same. All other octaves above and below become mapped in the same fashion as the one you define. If notes in other octaves get transposed to pitches outside the 128 note MIDI range, they are substituted with pitches inside the range.

3. If you would like to save the map, type in a name and click Save.

The map will appear in the Custom Maps list.

4. Click OK to execute the transposition.

To map all 128 MIDI notes to a single pitch:

1. Select the Custom Map transpose option.

The Custom Transpose options will appear.

2. Type in 128 in the From: option.

This includes all notes into one, large octave.

3. Type in 1 in the To: option.

This maps all note in the 128-note octave to a single note.

☐ Interval
☐ Diatonic
☐ Key /Scale
☒ Custom Map

From: notes starting at
 To: notes starting at

FROM	TO
C3	C1
Db3	C1
D3	C1
Eb3	C1
E3	C1
F3	C1
F#3	C1
G3	C1
Ab3	C1
A3	C1
Bb3	C1
B3	C1
C4	C1

4. Type in or play in a pitch in the To: option.

In the above example, all notes are being mapped to C1.

Transposing Each Pitch to Any Other Pitch

5. If you would like to save the map, type in a name and click Save.

The map will appear in the Custom Maps list.

6. Click OK to execute the transposition.

The Custom Map option can also map each pitch to any other pitch, completely independently from the same pitch in other octaves. This allows you to create a transpose map to easily change drum tracks from one drum machine to another.

To set up a drum machine transpose map:

1. Select the Custom Map transpose option.

The Custom Transpose options will appear.

2. Type in 128 in both the From: and To: options.

Since there is only one source and destination octave, each change you make in the Transpose Map's To column will not be carried through to any other octaves.

FROM	TO
C3	C2
Db3	C4
D3	F#3
Eb3	D3
E3	Db3
F3	G2
F#3	Db3
G3	Db3
Ab3	F3
A3	Bb2
Bb3	G4
B3	C-1
C4	Bb5

3. Pop-edit the pitches in the Transpose Map's To column.

Notice that each pitch treated individually and does not affect surrounding pitches or octaves. Notice in the above example that a same destination pitch, like Db3, can be used more than once, such as when several pitched tom-tom sounds are being mapped to a single tom sound.

Creating a Custom Scale

Create Scale...

4. If you would like to save the map, type in a name and click Save.

The map will appear in the Custom Maps list.

5. Click OK to execute the transposition.

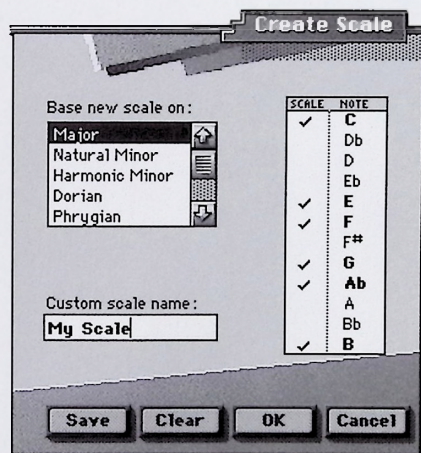
The Custom Scale option allows you to create your own scale. To do so, you select which pitches are diatonic and which ones are not.

After you create a custom scale, it appears in the list of keys/scales for the Diatonic and Key/Scale transposition options, allowing you to transpose diatonically using your own scale and any root pitch.

To create a custom scale:

1. Click the Create Scale button.

The Create Scale dialog box appears.



2. Select the pitches you wish to be diatonic pitches.

You can have as many or as few diatonic notes as you wish. You can also select the diatonic pitches by playing them on your MIDI controller. A pitch turns into boldface to indicate that it is diatonic.

3. Click OK to create the scale.

Your custom scale appears in the key/scale list for the Diatonic or Key/Scale transpose options.



Chapter 30 *Groove Quantize*

Performer's Groove Quantize feature is powerful, easy to use, and—from a creative standpoint—one of Performer's most enjoyable features.

This chapter tells you how you can do the following:

- Use the Groove Quantize command to control the rhythmic depth and “feel” of your music
- Dynamically adjust the feel of grooves with faders while applying them
- Use Groove Quantize to apply the rhythmic feel of a track to other tracks
- Create your own grooves, of any length, from any music you have recorded into Performer or loaded from a standard MIDI file
- Build a groove database from which you can instantly call up any groove you have created

What is a groove?

In musical terms, a *groove* is a unique rhythmic feel. Many artists are famous for a certain *feel*—or groove—in their music that makes their sound unique.

Performer's powerful Groove Quantize feature gives you complete reign over this important aspect of your music.

The effect of adding a groove to an otherwise mundane track can be stunning: the music instantly feels like it has a third dimension, and the sensation can be similar to that moment when you put on 3-D glasses in an old 3-D movie. Sometimes, the effect is subtle. Often, however, you'll find that a groove completely transforms music, making it sound totally different from its original form.

The elements of a groove

To master grooves, it is important to recognize the musical elements of a groove. A groove is generated by variations in the timing, accent, and duration of the notes being played. In Performer, a groove consists of a combination of the following elements:

- A quantize grid that affects the *timing* of notes (attacks only)
- A note-on velocity map
- A note duration map
- A meter
- A length (in measures)
- An overall beat subdivision

For example, a swing groove is usually based on a swung 8th note beat subdivision. If it's a hard swing, the eighth-note offbeats may be played quite late. The durations of the notes in such a groove tend to be longer, and the velocities emphasize the offbeats. The length of the groove is usually two bars, and it is often in 4/4 time.

When you apply a groove to some MIDI data in a track, the selected notes are modified according to these groove parameters.

Applying a groove

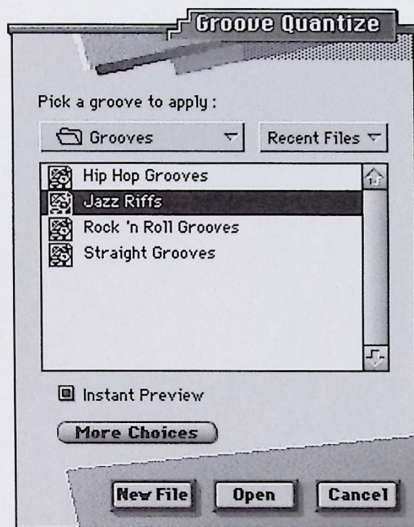
To apply an existing groove:

- 1. Use Performer's Memory-cycle feature to cycle playback over the region you wish to apply the groove to.**
- 2. Start playback.**
- 3. Select the data you wish to apply the groove to.**

Make sure that what you select is within the region Performer is currently looping. If you don't, you won't be able to audition the groove before applying it. Use any method of selection that you prefer. You can select individual notes or an entire region of data. The groove will be applied at the measure boundaries of the region you select.

4. **Choose Groove Quantize from the Region menu, or press command-G.**

The Groove Quantize dialog box appears. If you get an error message instead, then the Grooves folder is not in the same folder as Performer. If so, switch into the Macintosh Finder and move the Grooves folder into the same folder as Performer.



5. **Open one of the Groove files (or folders) in the list by either double-clicking its name or by clicking its name once and clicking the open button.**

You now see a list of grooves stored in that groove file.

6. **Select the desired groove by clicking its name.**

If the Instant Preview button is checked and Performer is playing back the region you selected, you'll hear the effect of the groove right away. You can audition as many grooves as you want without permanently applying one.

Instant preview

The Recent Files pop-up menu

The More Choices button

Locating a groove

7. If you'd like to adjust the feel of the groove, click the **More Choices** button.

This option is discussed further later on in this chapter.

8. To apply the groove, click **OK**.

When the Instant Preview button in the Groove Quantize dialog box is checked, you can preview grooves without having to click OK to apply them. This lets you quickly scan through a list of grooves, auditioning each one until you find one you like. To apply it, click OK. When Instant Preview is unchecked, you won't hear the groove until after you click OK.

The Recent Files pop-up menu is provided for your convenience. It lets you go directly into recently opened groove files.

The More Choices button causes several sliders to appear in the dialog box. A unique and powerful feature, these sliders let you adjust the degree to which the groove is applied—in essence, they let you “turn up” or “turn down” the groove. For more information, see “Adjusting groove parameters when applying a groove” on page 492.

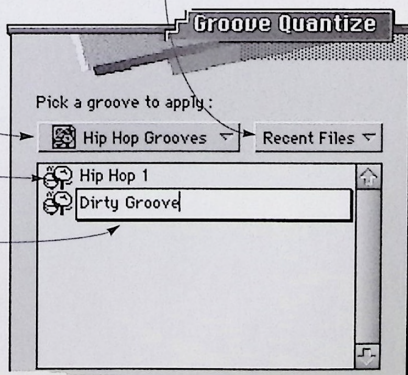
The groove list works like a standard Macintosh open dialog box. Use it in the standard fashion to locate grooves.

Use this pop-up menu to navigate through all of the groove files.

This pop-up menu lets you go directly into recently opened groove files.

Drag the groove icon to move it up or down in the list.

Option-click the name of the groove to rename it.



Renaming grooves

Deleting, moving, and duplicating grooves

To rename a groove:

- 1. Select any data or time region.**

It doesn't matter what you select.

- 2. Choose Groove Quantize from the Region menu.**

- 3. Locate the groove.**

- 4. Option-click its name to pop-edit the name, and press return to enter the new name.**

- 5. To exit the Groove Quantize dialog box, click either OK or Cancel.**

Click Cancel if you don't want to apply the groove. Click OK if you do.

Grooves can be cut, copied, and pasted in the Groove Quantize dialog box. This allows you to delete them, move them from one file to another, and duplicate them.

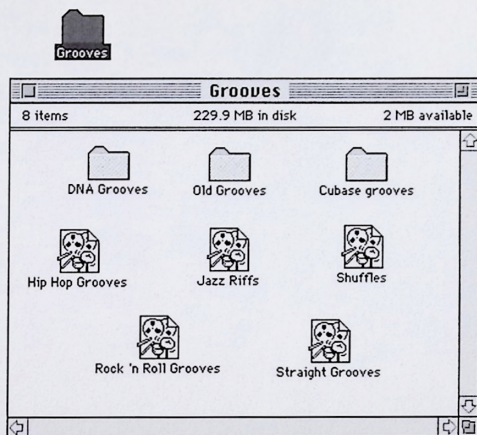
Duplicating is useful because you can make a copy of a groove and then make adjustments to the copy, which preserves the original.

To do any of these operations, you first open the Groove Quantize dialog box. To do so, select some data or a region and choose Groove Quantize from the Region menu. Locate the groove, and then do one of the following desired operations:

Operation:	How to do it:
To delete a groove	Click it in the list to select it and choose Cut from the Edit menu.
To move a groove from one file to another	Cut it (as described above), open another groove file using the pop-up menu above the list, and then choose Paste from the Edit menu.
To duplicate a groove	Click it to select it and choose Copy from the Edit menu. Then choose Paste from the Edit menu. After pasting, rename the copy to differentiate them.

Where grooves are stored

Grooves are stored in Performer groove files. You can store as many grooves as you want in a groove file. You can create as many groove files as you want. The only requirement is that groove files must be placed in a folder called "Grooves", and this folder must be placed in the same folder as Performer. This is all taken care of for you when you first install Performer, so unless you have moved the folder, you don't need to worry about it.



When you create your own groove files (discussed later), we recommend that you organize them by category as shown above. This will make it easier to locate grooves.

Notice that you can further organize your groove files by placing them in folders (as long as they remain inside the Grooves folder). You can even place System 7 aliases in the Grooves folder and place the actual groove files somewhere else on your hard disk.

Adjusting groove parameters when applying a groove

When you apply a groove, Performer allows you to adjust groove parameters without permanently altering the groove itself. For example, you can "turn up" the degree to which velocities are affected without changing the original velocity map in the groove. To permanently edit the groove see "Modifying grooves" on page 500.

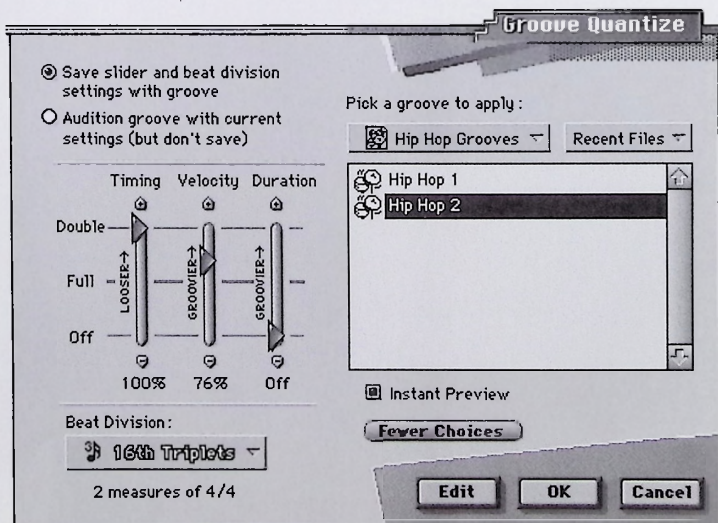
To adjust groove parameters while applying a groove:

1. Use Performer's Memory-cycle feature to cycle playback over the region you wish to apply the groove to.
2. Start playback.
3. Select the data you wish to apply the groove to.

Make sure that what you select is within the region Performer is currently looping. If you don't, you won't be able to audition the groove before applying it. Use any method of selection that you prefer. You can select individual notes or an entire region of data. The groove will be applied at the measure boundaries of the region you select.

4. Choose Groove Quantize from the Region menu.
5. Click the More choices button.

Several sliders appear in the Groove Quantize dialog box, along with several other options.



6. Select the groove you wish to apply from the list.

7. Make sure the Instant Preview check box is checked so you get instant feedback while adjusting the groove.

8. Adjust the groove as desired with the sliders.

These sliders are discussed in the following section.

9. If desired, try different beat divisions by choosing them from the beat division pop-up menu.

Changing the beat division often has a dramatic effect on the feel of the groove. This is discussed further in a following section.

10. Once you like the groove, click OK.

Fewer Choices button

The Fewer Choices button in the Groove Quantize dialog box removes the groove parameter sliders from the Groove Quantize dialog box to simplify its appearance. Click this button if you do not wish to adjust the groove with the sliders.

Using the groove adjustment sliders

The three groove adjustment sliders give you complete control over the feel of a groove. They let you dynamically control the degree to which the timing, note-on velocities, and durations are affected.

☛ When you move a slider, the change occurs when you let go of the slider (as long as the Instant Preview check box is checked). No changes occur while you move the slider.

In essence, these sliders let you control the extent to which you are applying the original feel of the groove. You can either “turn up” or “turn down” its effect. We urge you to experiment with them because they produce interesting effects. The sliders perform as follows:

Groove slider setting:	Result:
Off (0%)	Velocities and durations are unchanged. For timing, a straight grid quantize is applied.
Full (100%)	Applies the exact feeling of the groove.
Double (200%)	Groove feeling is exaggerated by a factor of 2.

Saving groove settings with a groove

You can clearly hear the effect of one slider by setting the other two sliders to their *off* position and then trying different strengths on the remaining slider.

One effective approach with these sliders is to set them all to off (0%) and then increase each one in small increments. Use the up and down arrow buttons to make small adjustments. This lets you gradually apply the groove to a point that sounds best.

The option called *Save slider and beat division settings with groove* causes the current slider and beat division settings to be saved with the groove. In addition, when you first select the groove in the list, the sliders will jump as necessary to reflect the currently saved slider settings for that groove.

When this option is selected, slider settings are saved immediately when you move the slider. If you want to try changing the setting without losing the saved settings, use the option called *Audition groove with current slider settings (but don't save)*, which is discussed below.

Auditioning groove settings

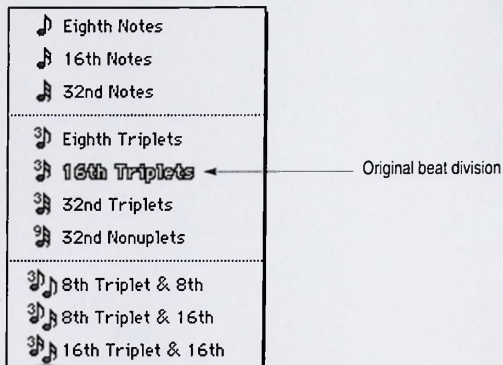
The option called *Audition groove with current settings (but don't save)* lets you adjust the sliders without affecting the settings that are currently saved with the slider. The same goes for the Beat Division pop-up menu. In addition, this option lets you quickly audition a number of different grooves with the same settings (because the settings won't change when you select a new groove). For example, if you like the degree of groove you've set with the sliders, but you aren't quite satisfied with the type of groove yet, you can try several other grooves with the same slider settings.

If you've auditioned sliders settings and wish to now save them, click the *Save slider settings with groove* button.

Using different beat divisions

The beat division pop-up menu lets you choose an underlying quantize grid for the groove. Divisions range from eighth notes to 32nd notes in both straight and triplet time; several combination grids are also provided. See "Choosing a beat division" on page 499 for more information.

This pop-up menu allows you to try different beat divisions without losing the original beat division in the groove. For example, you can try applying an 8th-note division to a groove with a 16th triplet beat division. The original beat division is displayed in outline format as shown below:



Notice that a groove can have more than one original beat division, and each original beat division can have its own unique settings. This can be accomplished by editing the groove. See “Adding an additional default beat division to a groove” on page 502 for more information.

The beat division pop-up menu is governed by the radio button options at the top of the window. (See “Saving groove settings with a groove” on page 495.) One option saves the beat division setting with the groove. The other lets you audition different grooves with a certain beat division. For example, if you have a bunch of grooves that were created in 16th note divisions, but the particular section you are applying the groove to right now is in triplets, you can set the beat division menu to triplets, and leave it there as you audition groove after groove.

The beat subdivision has a dramatic impact on the groove. Try experimenting with different choices.

Grooves usually sound closest to their original feel with the beat division at which they were created.

Creating a groove

The Create Groove command lets you create your own Grooves from MIDI note data in any track. The source material can come from any Performer file or any standard MIDI file. Grooves can be any length.

To create a groove:

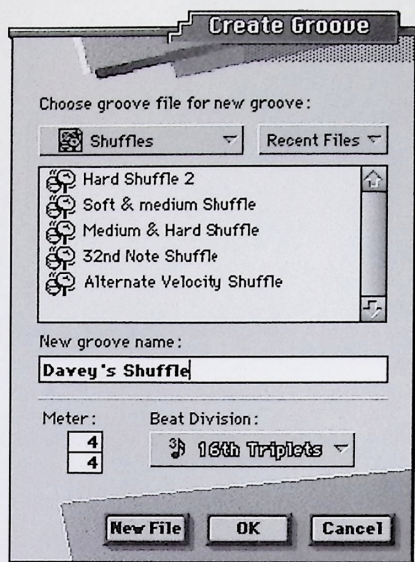
- 1. Select the notes (or region of notes) you wish to use as source material for the groove.**

You may select them in the Track list, the Tracks Overview, or any of Performer's editing windows. The groove will start at the beginning of the first measure of your selection, and its length will be a whole number of measures.

- ☛ When you choose source material for a groove, the data must be aligned with Performer's metronome (main counter). For example, you can't use a rubato passage, unless you first use the Record Beats feature to align Performer's measure and beat boundaries with the music.

- 2. Choose Create Groove from the Region menu.**

The Create Groove dialog box appears.



3. Open a groove file in which to save the groove, or create a new groove file with the New File button.
4. Type in a name for the groove.
5. If desired, change the meter for the groove.

This setting affects the overall length of the groove, and it also affects how many beats are in each measure. Try to choose a meter that most closely resembles the beat structure of the groove you are creating.

6. Choose a default beat division for the groove from the pop-up menu.

See "Choosing a beat division" on page 499 regarding this option.

7. Click OK to save the groove, or click Cancel to withdraw the command.

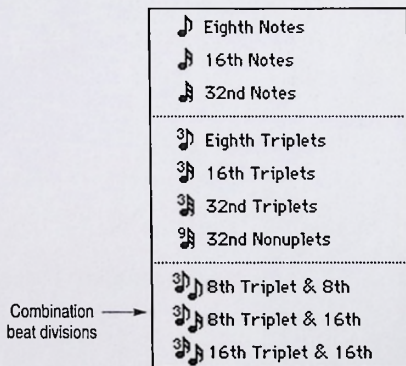
The new groove gets added at the bottom of the groove list.

Choosing a beat division

The choice you make for a beat division when creating a groove is an important one, for it governs the underlying resolution of the quantization that occurs when you apply the groove. The choices range from eighth notes to 32nd notes in both straight and triplet time; several combination grids are also provided.

As a rule of thumb, when you choose a beat division, think of how the music is notated, and use the shortest note duration that would be used to notate it. For example, a swing feel is customarily written as straight eighth notes. So when you are choosing a beat division for a swing groove, use a straight eighth note grid.

If the groove style you are defining has both a straight and triplet feel, use the appropriate *combination* grid (the straight and triplet options at the bottom of the menu, as shown below). For example, swung music often includes straight sixteenths, so you'd choose a triplet eighth/sixteenth combination.



Keep in mind, however, that the combination grid has beat divisions for both straight time and triplet time, so there are more grid points. If the music you apply the groove to is not rhythmically accurate to begin with, there is more of a chance that notes will gravitate to the wrong grid point. For this reason, use discretion when applying combination grids. In some cases, it might be better to use a non-combination grid. When in doubt, you can make two versions of the groove: one with a combination grid and another with a straight or triplet grid.

Modifying grooves

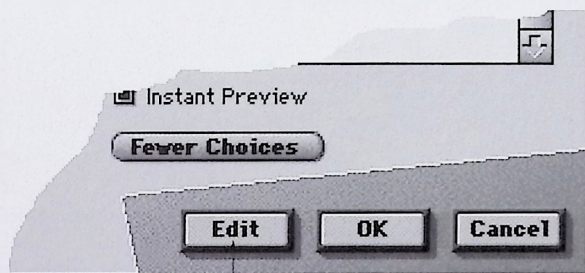
Performer provides you with the ability to modify the timing, velocity, and duration information in the groove itself. Fortunately, you can do so quickly and easily, without having to switch files.

To modify a groove:

1. **Select any data or time region.**

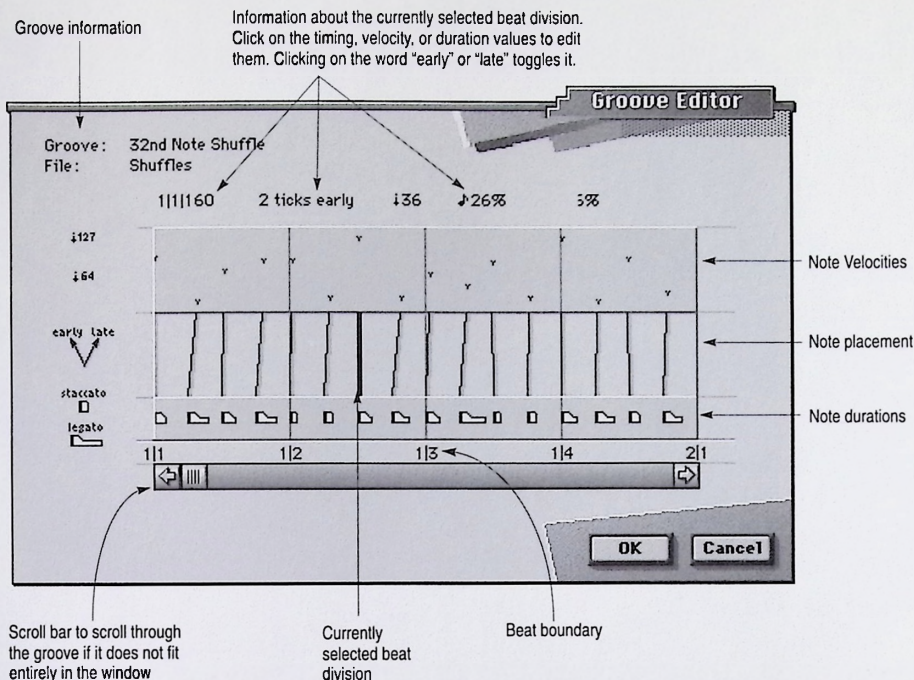
It doesn't matter what you select.

2. **Choose Groove Quantize from the Region menu.**
3. **Locate the groove.**
4. **Click the Edit button.**



Click the Edit button to edit the groove.

5. **The Groove Editor dialog box appears.**



6. Edit each beat division as desired.

If Instant Preview is enabled, and you are looping a section to hear your changes, you'll hear them right away as you make them. Here is a summary of what to do in this window.

To do this:

Increase or decrease a velocity

Adjust note placement earlier or later

Increase or decrease a duration

Do this:

Drag it up or down

Drag the note placement bar to the left or right

Drag the right side of the duration icon left or right (0 - 200%)

Duplicating a groove before modifying it to preserve the original

Adding an additional default beat division to a groove

Obtaining grooves

7. Click OK to confirm your edits, or click cancel to withdraw the command.

The groove editor makes permanent changes to the groove (unlike adjusting the groove sliders, which doesn't affect the groove data itself). As a result, if you want to modify a groove but preserve the original, duplicate the groove and then edit the copy. To duplicate a groove, see "Deleting, moving, and duplicating grooves" on page 491.

A groove can have several default beat divisions (as shown in the pop-up menu on page 496). This lets you produce several permanent variations of the groove within the groove itself. To do so, select a non-default beat division from the beat division pop-up menu in the Groove Quantize dialog box right before you click the Edit button. Doing so lets you modify the groove based on the newly selected beat division. The modifications you make to the groove in the editor will be unique to that beat division; you won't affect the groove with its original beat division setting. When you click OK, the beat division you chose will become outlined, and you'll be able to freely change between the two groove variations simply by selecting the outlined beat divisions in the beat division pop-up menu.

There are many ways to obtain grooves. You can:

- Use the stock grooves provided with Performer
- Create new grooves from scratch in Performer
- "Cop" grooves from any Performer file or standard MIDI file
- Purchase commercially available standard MIDI file libraries and create grooves from the MIDI data in them
- Purchase commercially available groove libraries

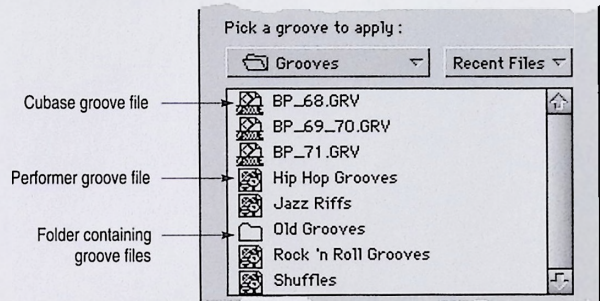
Commercially available MIDI groove libraries are similar to sample libraries; they have been painstakingly produced in the recording studio. For example, WC Research, Inc., the producers of DNA™ grooves, have pulled industry legends such as Clyde Stubblefield and Bernard Purdie into the recording studio specifically for the purpose

of encoding their unique feel. The results are stunning, and we strongly recommend that you check them out. A folder of sample DNA grooves is included with Performer.

MIDI grooves are similar to digital sampling in the sense that they present us with similar copyright issues. If you cop someone's groove using Performer's Create Groove feature, consider handling it in the same fashion as you would for samples.

Cubase grooves

Performer can read Cubase groove files if they are placed in Performer's Grooves folder. They appear in the Groove Quantize list with a different icon along with all of your Performer groove files. They can be used in the same fashion as Performer grooves.



Cubase grooves can be viewed in Performer's Groove Editor, but they cannot be edited directly. To edit them, first move them into a Performer groove file using the Copy and Paste commands in the Edit menu (see "Deleting, moving, and duplicating grooves" on page 491).

Applying the groove from one track to another

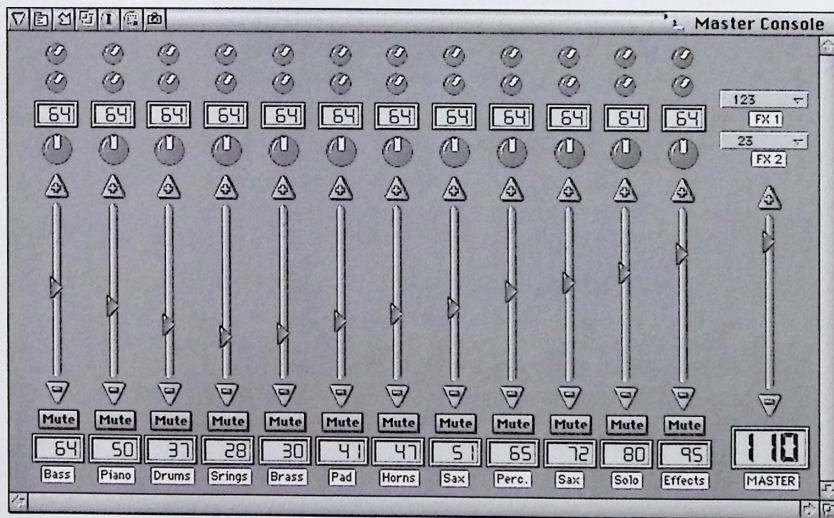
To apply a groove from one track to another, create a new groove based on the original track. Once you have created the groove, you can apply it to any other track you wish using the Groove Quantize command. The Groove you create can be of any length.



Chapter 31 *Custom Control Consoles*

Performer's custom control consoles provide a host of control items, including:

- Sliders
- Knobs
- Buttons
- Pop-up menus



Each control item can be used for virtually any musical purpose that involves MIDI data. For example, a control item can:

- Act as a “virtual” MIDI instrument, generating continuous data which can be sent to synthesizers and recorded into tracks
- Remap data, such as velocities into controllers
- Modify velocities of notes as you play back
- Generate system exclusive data to modify synth parameters on the fly

You can build customized control consoles, such as:

- Mixing consoles with sliders and knobs that control MIDI volume and pan
- Patch editing consoles that control and shape the sounds in your synthesizers.

The sliders, knobs, and buttons can be controlled in real time, while Performer is playing back or recording, to create musical effects. In addition, they animate during playback to reflect what you have recorded.

Basics

Custom Control items serve two functions. First, they **monitor** MIDI data being played from their target track or MIDI channel, animating in real time to reflect the data’s current value. For example, let’s say you have a track containing a stream of controller #7 (volume) data, and the controllers increase in value (in the range from zero to 127), making a crescendo. A control item assigned to monitor controller #7 in the track will move as the track is played back, reflecting the changes in the values of the controller.

Secondly, control items **generate** new continuous MIDI controller data in real time when you take control of them, and send the data to either a FreeMIDI device or track. When you take control of a control item, the new data that it generates *overrides the data already in the track*.

To demonstrate this, let’s return to the volume example above with the crescendo in the track. If you play back the track and grab the control item with the mouse half way through the crescendo, you will take over the volume of the track with the control item. The crescendo still exists in the track, but it does not get played as long

Creating a Custom Console

Creating a MIDI Volume and Pan Control Console

as you are gripping the control item with the mouse. If you release the control item, it will immediately begin monitoring the existing data in the track again.

In summary, control items monitor continuous data being played back from their target track or MIDI channel. Grabbing a control item generates new data which overrides the data in its target track. The new data does not modify the track; it only temporarily overrides the continuous data in the track.

Custom controls are created and displayed in custom console windows. You can create as many custom console windows as you like. They save, close, and open like other Performer windows.

You can create control consoles automatically or by hand.

For basic MIDI controls, such as volume sliders, pan knobs, mod wheel sliders, and pitch bend sliders, you can create them automatically using the Create Console command in the Tracks window.

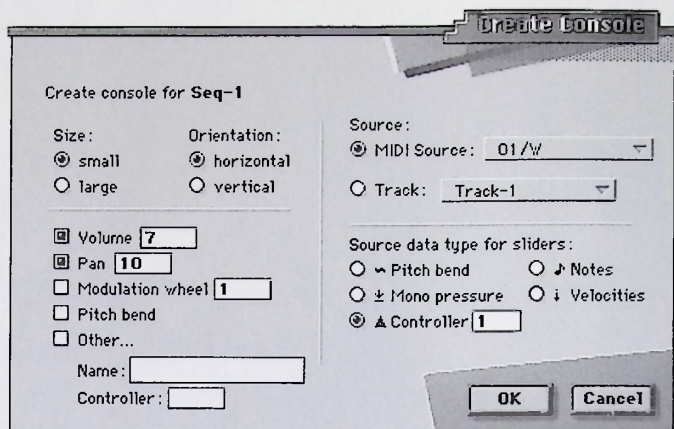
To quickly create a control console with sliders and knobs for MIDI volume and pan in the Tracks window:

- 1. Highlight the Track(s) for which you wish to make a console.**

Click each track name to highlight it. Shift-click to select tracks not next to one another.

- 2. Choose Create Console from the Tracks window mini-menu.**

The Create Console dialog box appears.



3. Select the dimensions of the sliders you will create in the console.

Pan control items are created as knobs. All of the other types of items are created as sliders. The slider dimensions you choose can be modified after the console is created.

4. Select the type of control items you want to create for each track that you have selected.

The Other option allows you to choose a controller of your choice and name it. If you select multiple items, they are placed together in the same console. If you would like each type of item to be in a separate console, select one type at a time and repeat this entire procedure for each type. For example, if you want volume sliders in one console, and pan sliders in a different console, choose only volume, click OK and then repeat the procedure for pan.

5. If desired, choose a source for the control items.

The most common form of a source is an external MIDI controller, such as the mod wheel or pitch bend wheel on your controller keyboard. This allows you to move the slider or knob with your mod wheel. If you do not need to do this, leave the source option settings as they are.

Building a Custom Console

Quick Reference

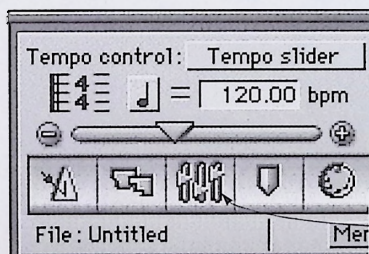
- Note that the control item doesn't not require a source data type to record data and animate during playback! Instead, it records and monitors the target data (volume, pan, etc.) that you have selected.

6. If necessary, choose the source data type.

7. Click OK to create the console.

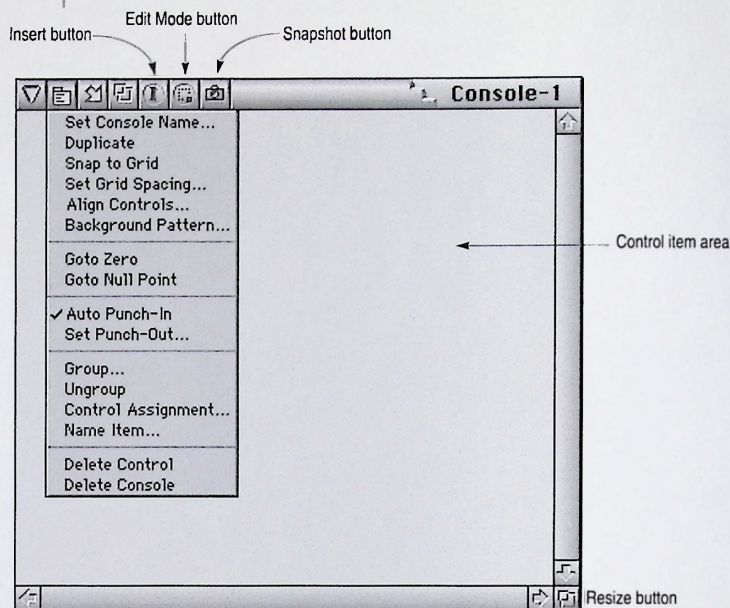
Clicking OK creates the console and adds the Console's name to the Windows menu. The console that you created will appear in the center of the screen.

If you would like to create your own customized console, you can open a new, blank custom console. To do so, click the Custom Consoles button in the Consolidated Controls panel.



Custom consoles button creates a new, empty console in which you can build controls.

A new, empty console window appears. It has a title bar, close box, push down box, mini-menu and grow box like a standard Performer window. Drag the title bar to move it. Click the close box to close it.



Insert button: inserts a slider, knob, button, or other control item.

Edit Mode button: Toggles between two modes in the console. When Edit Mode is on (the button is highlighted), console items can be moved, resized, deleted, and otherwise graphically manipulated. When Edit mode is off, control items cannot be moved; instead, sliders slide, knobs turn, buttons push, and so on.

Snapshot button: takes a snapshot of the current knob, slider, and other control settings and records the current setting in the track at the current counter location. This can be done while Performer is stopped or playing back.

Control Items area: this is the area where you create and position the knobs, sliders, buttons, etc.

Resize button: resizes the window.

Mini-menu Quick Reference

Set Console Name: Provides a dialog box in which you can change the name that displays in the title bar of the console and in the Windows menu.

Duplicate: Makes a copy of selected control items.

Snap to Grid: Toggles whether or not control items snap to an invisible grid in the console when they are moved or resized. When checked, Grid Snap is on. When not checked, Grid Snap is off.

Set Grid Spacing: determines the resolution of the snap grid when snapping is turned on. The resolution is measured in screen pixels, which are approximately 72 dots per inch (dpi).

Align controls: Lines up selected controls to one another in a configuration that you choose. For example, you can line up the centers of several control items by selecting them and choosing this command.

Background pattern: Allows you to fill the control item area with a standard Macintosh background pattern similar to the fill patterns found in paint programs. Sliders, knobs, and buttons appear superimposed on top of the background pattern.

Goto Zero: Sets the value of the highlighted control item(s) to zero.

Goto Null Point: Sets the value of a highlighted master control item to its null point.

Auto Punch-In: A special record mode for control items which causes them to record data into their target track only when the control item is moved, either with the mouse or an external source.

Set Punch-Out: Opens the Set Punch-Out dialog box, which allows you to adjust the delay before punch-out when you are in Auto Punch-In mode and are controlling a control item from an external MIDI source. The Punch-Out time is the amount of time (in tenths of a second) between when the last event is received by a control item from its external source and the time at which the control item drops out of Record.

Creating a Slider, Knob, or Button

Group: Opens the Grouping dialog box for the highlighted control items. This command allows you to assign control items to a group all at once rather than one at a time.

Ungroup: Removes the highlighted control items from their assigned group.

Control Assignment: Opens the Control Assignment dialog box for the currently selected control item in the console. This dialog contains all of the settings for how the control item behaves.

Name item: Lets you type in a name for a currently selected control item.

Delete Control: Removes the currently selected control item(s) from the console.

Delete Console: removes the console from the screen and removes its name from the windows menu.

To create a control item:

1. **(Optional) Select the Snap to Grid menu item to turn the snap grid on or off.**

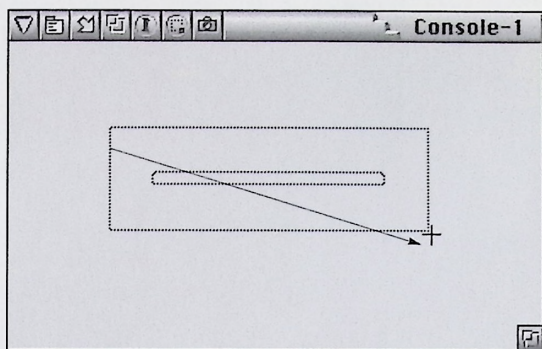
This causes the control item to snap to an invisible grid in the console window when you create it, which can be useful for lining up multiple buttons and sliders.

1. **Press the insert button in the title bar.**
2. **Choose the item you would like to insert.**

The cursors turns into a cross-hair.

3. **Drag across a blank portion of the console window.**

As you drag, the item appears. You can choose any length or size that you like. You can also resize the item at any time.



4. When you release the mouse, the control Assignment dialog box appears.

Control Assignment

Assignment for **Volume slider**

Source		Target	
<input checked="" type="radio"/> MIDI:	K2000	<input checked="" type="radio"/> MIDI:	Morpheus-1
<input type="radio"/> Track:	Track-1	<input type="radio"/> Track:	Track-1
Receive: Controller		Send: Controller	
Cont. #	1 Modulation wheel	Cont. #	7 Volume
Minimum time change:	0 ticks	Minimum value:	0
Minimum value change:	0	Maximum value:	127
Groups:		Relation to master:	
<input type="radio"/> Master <input checked="" type="radio"/> Slave (A-Z)		<input type="radio"/> Match <input type="radio"/> Offset <input checked="" type="radio"/> Scale by 100%	
		Polarity:	
		<input checked="" type="radio"/> Positive <input type="radio"/> Negative	
Name:	Type:		
Unnamed Slider	Slider		
			<input type="button" value="OK"/> <input type="button" value="Cancel"/>

5. (Optional) Choose a source data type for the control item.

See "Making the Source Assignment" on page 516 for more information.

6. Choose the Target data type for the control item.

See “Making the Target Assignment” on page 515 for more information.

7. (Optional) Set the minimum and maximum time change.

These two options (on the left) control the density of the data that the control item generates. The lower the values, the more dense the data. Higher values thin out the data. Try to use as high a value as you can while still maintaining the musical effect you wish to achieve. If you use values that are too high, and the data is too thinly generated, it may not sound good.

8. Choose the minimum and maximum values for the control item.

These are the absolute lowest and highest values that the control item can have. For controllers, the maximum range is 0 to 127. For pitch bend, the range is -8192 to +8191.

9. (Optional) Assign the control item to a group.

See “Grouping Control Items” on page 533 for more information.

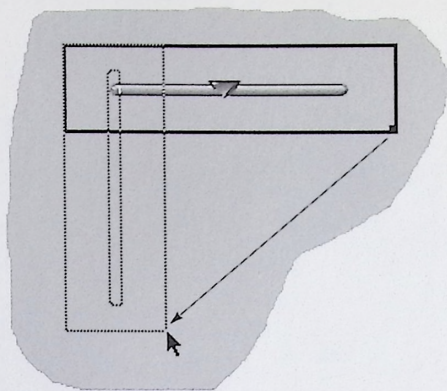
10. Type in a name for the control item.

11. If desired, change the type of item (slider, knob, button) by choosing a different item type from the Type pop-up menu.

12. When you have set all of the parameters as desired, click OK.

The control item appears in the console. Notice that it has a box around it. You can click the handle in the lower left of the box to further reshape the item.

Making the Target Assignment



The target assignment is made in the Control Assignment dialog box when you first create the slider, knob or button as shown in the previous section. The target can be changed at any time by double-clicking the control item.

The target assignment consists of two things: the *type of MIDI data* and the *target*, which is place where the data will be sent.



The **target data type** is the specific type of MIDI data that the control item will send and monitor. A control item only monitors one track and one data type at a time.

Sliders, knobs, and buttons in Performer can control just about any type of MIDI data, including:

- Continuous controllers
- Switch controllers (either as switch controllers or as continuous controllers)
- System exclusive messages
- Notes and velocities

For velocities, the slider or knob modifies the velocities of notes in the target track as they play.

The **Target** is the place where the data will be sent by the slider, knob or button. The target can be:

- A track
- A FreeMIDI device

When the target is a **track**, the data from the control item is sent to the track, which then records and plays the data. In turn, the control item monitors the material it recorded in the track, animating as it does so. However, the control item only records into that one track in that one sequence; it cannot control another track in another sequence, unless you reassign it.

When the target is a **FreeMIDI device**, the data from the control item is sent to the track in the current sequence which is assigned to that device. This is the most flexible of the target assignments because it doesn't matter what sequence is playing at the time. As long as one of its tracks is assigned to the device, the control item data will be recorded and monitored in the track.

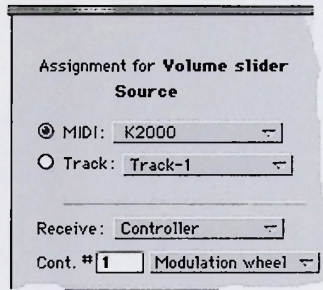
Making the Source Assignment

The source assignment is made in the Control Assignment dialog box when you first create the slider, knob or button as described in "Creating a Slider, Knob, or Button" on page 512. The source can be changed at any time by double-clicking the control item.

What is a source for the slider or knob? It is a device other than the mouse which you can use to control the slider or knob. Normally, you change the value of a slider or knob by dragging it with the mouse. At times, however, it might be useful to move it from an external controller, such as the modulation wheel or data entry slider

on your MIDI keyboard controller. To do so, set the Source assignment to match the incoming MIDI channel and data type for the controller you wish to use.

The source assignment consists of two things: a *type of MIDI data* and the *MIDI channel or track* from which the data is being generated.



Notice that the slider or knob can be controlled by notes, velocities, pitch bend, controllers, or even mono pressure.

Set the MIDI channel to match the transmit channel of the controller, pitch bend wheel, or whatever you are using.

Notice that the source can also be a track. Source data in the track then controls the slider. This allows you to create interesting effects. For example, you can assign the source of a slider to be the velocities of notes in track 3. You can then assign the target to be controller number 7 (volume) and assign it to the synth playing back the notes in track three. When you play the track, the slider reads the velocities and sends out a volume controllers to match the velocities, thus enhancing the volume change effect from the velocities.

Changing the Source or Target

To change the source or target assignment:

1. **Be sure the Edit mode button in the title bar of the console window is unhighlighted (turned off).**
2. **Click the knob or slider to select it.**
3. **Choose Control Assignment from the mini-menu.**

As a shortcut, double-click the control item.

Adding Arrows to a Slider or Knob

4. Set the source or target assignments as needed.

5. Click OK.

To connect a scroll arrow to a slider:

1. (Optional) Select “Snap to Grid” from the Console window mini-menu to check it.

Doing so causes the arrow to be lined up with the slider or knob. Otherwise, you may need to manually adjust the position of the arrow to line it up with the slider. The arrow doesn't have to be lined up, however; it will control the slider no matter where you place it.

2. Insert the slider or knob.

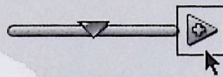
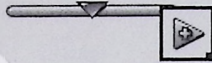
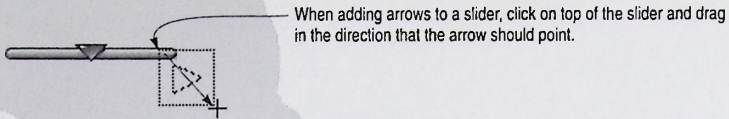
To do so, press the insert button, choose slider (or knob), and drag out the slider. The Control Assignment dialog appears. Select the desired settings and click OK.

3. Press the insert button again and choose “Arrow” from the menu.

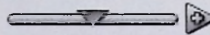
Once you have chosen to insert an arrow, the cursor turns into a cross-hair.

4. Click directly on top of the slider and drag in the direction to which the arrow should point.

Don't worry about the exact placement of the arrow yet. You can take care of that after you have inserted it. Drag up or to the right to create an increment button; drag down or to the left to create a decrement button. Control the size of the arrow with the size of the box that you drag out. Below, an increment arrow is being inserted by dragging to the right. Notice that the cross-hair was initially clicked on top of the slider.



Once inserted, you can adjust the size and placement by dragging the arrow and its size handle. Use the Align command in the mini-menu to quickly line things up.



Adding a Value Box to a Slider, Knob, or Button

5. Adjust the size and placement of the arrow as needed.

Use the Align command in the mini-menu to automatically align the arrow with the slider.

6. To use the arrow, click the edit button in the console title bar to unhighlight it and click the arrow button.

A value box displays the current value of the slider, knob, or button, and it will update continuously as you move the slider or knob.

If you want, you can add a value box to a button. However, buttons can only send up to two values, so a value box might not be useful since it will only display two different values. (On the other hand, you might have a situation in which it *would* be useful, so that's why we mentioned it.)

To add a value box:

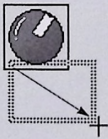
1. (Optional) Select **"Snap to Grid"** from the Console window mini-menu to check it.

Doing so causes the value box to be lined up with the slider or knob. Otherwise, you may need to manually adjust the position of the value box to line it up with the slider. The value box doesn't have to be lined up, however; it will be connected to the slider no matter where you place it.

1. **Insert the slider, knob, or button.**

To do so, press the insert button, choose slider, and drag out the slider. The Control Assignment dialog appears. Select the desired settings and click OK.

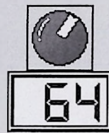
2. **Press the Insert button again and choose "Value Box" from the pop-up list.**
3. **Click on top of the item to which you wish to add the value box, and drag diagonally to create the value box.**



Click on top of the knob or slider and drag out a box for the appropriate size.



Once inserted, you can adjust the size and placement.



If grid snapping is enabled, click in the corner to line up the value box with the knob or slider.



Using Value Boxes

You can enter a value into a value box just like Performer's main counter. To change the value inside an edit box:

1. **Click inside the value box.**

The numbers inside become highlighted.

Labelling a Slider, Knob, or Button

2. Type the desired value.

Use the arrow keys if necessary.

3. Press return to confirm your choice.

Often you will want to label the sliders, knobs, and buttons that you create. If you didn't set the name when you first created the control item, set it as follows:

1. Click the border of the control item to select it.

Alternately, you can shift-click anywhere on the control item to select it.

2. Choose "Name Item" from the mini-menu.

3. Type in the desired name.

4. Click OK to confirm your choice.

To add a label to the control item:

1. Press the insert button and choose "Label" from the menu.

2. Click directly on top of the control item.

The label appears.

3. If necessary, drag the label to the desired position.


You can do so with grid snapping enabled or disabled.

To change the text of a label:

1. Click the label to select it, or click the border of the control item.

2. Choose "Name Item" from the mini-menu.

3. Type in the new name and click OK.

 **Note:** as a shortcut, you can option-click the label.

Creating a Button

Buttons send one MIDI message at a time. For example, a button might send a patch change to a synth or a MIDI patcher.

To create a button:

1. **Press the insert button and choose “Button” or “Text Button” from the menu.**

A text button displays its label inside the button.

2. **Drag the cross-hair across the console to insert the button.**

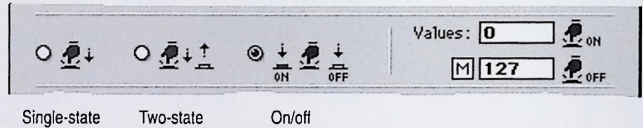
The Control Assignment dialog box appears.

3. **Set the Source and Target items as desired.**

See “Making the Target Assignment” on page 515 and “Making the Source Assignment” on page 516.

4. **Select the type of button you wish it to be.**

There are three types of buttons:



- **Single state button:** sends a single message only.
- **Two-state button:** toggles between two messages, sending the first when it is pressed and the second when it is released. For example, you might want to create a temporary mute button that mutes the track only while you are holding down the button. If you choose this type of button, you have two values to enter to the right of the option.
- **On/off button:** toggles between two messages, sending the first when it is pressed and the second when it is pressed again, and so on. For example, the button might toggle between a volume controller of zero and 127 to mute and unmute a track. If you choose this type of button, you have two values to enter to the right of the option.

5. If you want the button to act like a mute button, click the "M" next to off value button as shown below.

When this setting is enabled, the button sends the current value of its target controller type at the time the button is unmuted, instead of sending a specific maximum value. This makes a button assigned to controller #7 (volume) act just like a real mute button by returning the track to the current volume at the moment it is unmuted.

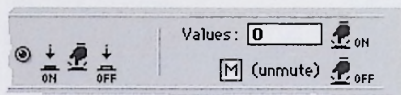


Figure 31-1

6. If desired, choose a group for the button.

Buttons can be grouped, either by a master button or even by a slider or knob.

7. If desired, type in a name for the button.

If it is a text button, the name will be displayed inside the button.

8. Click OK.

Selecting Control Items

Shift-click anywhere on a control item to select it. You can also use shift-clicking to select multiple items.

To select a group of items, drag a selection box over them.

To select all the items in the console, choose Select All from the Edit menu, or press command-A.

Cutting, Copying, and Pasting Console Controls

Console controls can be cut, copied, and pasted. This greatly facilitates the process of building a custom control console. For example, if you are creating a number of items that are similar, make one first and then copy and paste it as many times as needed. Then make the necessary minor adjustments to each copy.

Aligning Control Items

To cut or copy a control item:

- 1. Select the desired item(s).**

Note that you can select more than one at a time. For information about selecting control items, see “Selecting Control Items” on page 523.

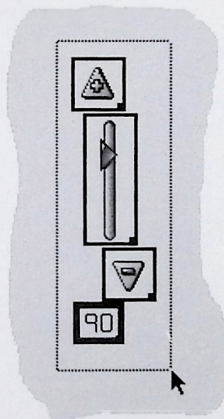
- 2. Choose Cut or Copy from the Edit menu.**

To paste a control item after cutting or copying, choose Paste from the Edit menu.

There is an Align Controls command in the Console mini-menu to help align selected console controls.

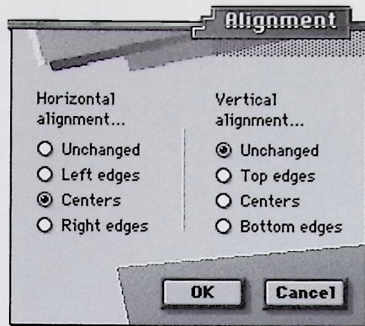
To use this command:

- 1. Select the items to be aligned.**



- 2. Choose Align Controls from the console mini-menu.**

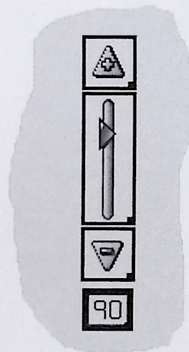
The Align Controls dialog appears.



3. Choose the desired options.

In this example, we are aligning the centers of the objects left-to-right.

4. Click OK.



Nudging Control Items

Selected control items can be nudged using the arrow keys. Be sure that the item you want to nudge is selected. (You can nudge several at once, too.) Also make sure that the Edit Mode button in the title bar of the console is highlighted as shown below. Items are nudged one screen pixel each time you press an arrow key.

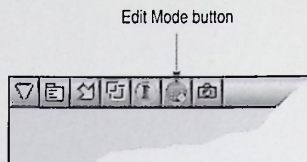
Moving or Removing Control Items

Duplicating a Control Item

Changing the Parameters of a Control Item

Moving or Resizing a Control Item

Setting a Background Pattern for the Console



Once you have selected control items as described in the previous section, you can drag them anywhere in the console window. You can also remove them from the console by hitting the delete key or by choosing Erase from the Edit menu.

To duplicate a control item:

- 1. Select the control item.**

See “Selecting Control Items” on page 523.

- 2. Choose “Duplicate” from the Console mini-menu.**

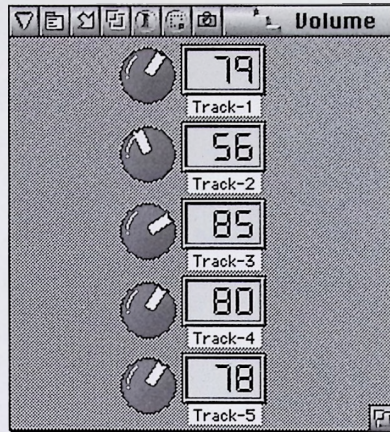
To change the source, target, grouping, and other parameters for a control item, double-click it. The Control Assignment dialog box appears. Change what you wish and then click OK.

To move or resize a control item, you need to be in edit mode. To enter edit mode, click the Edit Mode button in the title bar so that it becomes highlighted. When you are in edit mode, you can only edit control items. You cannot use them, i.e. you cannot slide a slider, turn a knob, press a button, etc. To use the control items again, unhighlight the edit mode button.

As a shortcut, you can enter edit mode temporarily by holding down the command key (instead of clicking the edit button) as you click the control item. Doing so allows you to move it or resize it without clicking the Edit Mode button in the title bar.

The Background Pattern command in the Console window mini-menu opens a dialog from which you can choose a foreground and background pattern for the console. Click the pattern you wish for each, and the sliders, knobs, and buttons in the console will be superimposed on top of that pattern.

You can use this feature to visually differentiate different types of consoles. For example, you could give your volume consoles a different background pattern from your effects consoles.

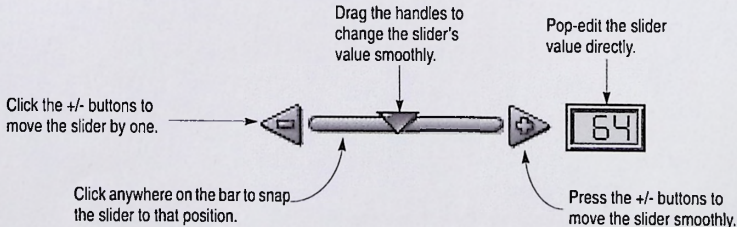


Controlling Knobs and Sliders

Controlling a Slider or Knob with the Mouse

The following sections explain how to control sliders and knobs.

Try moving the slider with the following mouse actions to familiarize yourself with them.



To move a knob, simply click on it and drag horizontally or vertically.

Controlling a Knob or Slider with a Mod or Pitch Bend Wheel

Once you have made the source assignment as described in “Making the Source Assignment” on page 516, click the slider or knob name to highlight it and move the mod wheel. You will see the slider respond as you move the wheel.

- ☛ Remember, the slider or knob must be selected for external control to work.

When a slider or knob is being controlled externally, data from the external source is exclusive to the slider; that is, the data is used solely to control the slider and will not be accidentally recorded into another track.

Remapping Data on the Fly

External control is a very powerful feature because it allows you to reassign continuous data in real time as you move the controller. For example, a volume slider that is being controlled by a mod wheel is actually receiving controller #1 data from the wheel and then converting it into controller #7 data on-the-fly.

Performer also allows you to control sliders with several types of data that you might not consider at first: notes, velocities, and aftertouch.

Moving a Slider or Knob During Playback

To move the slider during playback, simply press the play button and move the slider with the mouse or mod wheel, while the scale is playing back. Notice that the volume changes as you move the slider.

Controlling a Slider or Knob with Notes

MIDI notes are numbered from 0 to 127. C3 is note number 60, for example. Note numbers correspond exactly to controller numbers, so pressing a note on your keyboard will set the slider to its corresponding value. This is useful for creating sudden, precise changes in controller value rather than smooth changes. Keep in mind while you do this that most keyboards do not have 127 keys and therefore will not allow you to span the entire zero to 127 range of the slider.

Controlling a Slider or Knob with Velocity and Aftertouch

Note velocities can also be used to control the slider, since they also span the range from zero to 127. The harder you strike a key, the higher (or lower) the slider will go. This might be useful for setting up a slider to send a controller that, in turn, affects a synth in a certain way: as you strike the key harder, the musical effect will become stronger (or weaker).

Recording a Knob, Slider, or Button

The same applies to aftertouch data. The harder you press on the key, the higher (or lower) the control item will go.

Once a control item's target and source parameters have been set up, you can record data generated by it into its target track. Recording with custom controls is specially designed so that the data from the control item will not erase data that already exists in the track. Instead, data generated by a knob, slider, or button is merged with existing data. For example, you can record a crescendo (in the form of controller #7 data) from the control item without erasing any of the notes in the track.

On the other hand, data from the control item *replaces* any existing data *of the same type*. If a track already contains controller #7 data from measure 1 to measure 10, and you record briefly with the slider in measure 5, the new data recorded from the slider will *replace* the existing controller #7 data in measure 5.

With this in mind, sliders, knobs and buttons can be recorded in one of three ways:

- You can record a single “snapshot” of the current setting of all the sliders and buttons in a console. To do so, set up the console the way you wish, set the Main Counter to the desired location, and then click the Snapshot button in the title bar of the console. Or, click the Snapshot button during playback or recording. For more information, see “Taking a Snapshot of a Console” on page 532.
- You can record *without Punch-in mode* (unchecked in the console window mini-menu), which causes the slider or knob to record continuously, even when you are not moving the slider, so that it continually replaces its own data type in the track.
- You can record *with Punch-in mode*, which causes the slider or knob to only record when you move it. Punch-in mode is enabled by default.

Record-enabling an empty track

When recording console controls, a track has to be record-enabled. Note, however, that you do not need to record-enable the track whose fader you want to record.

Enabling Auto Punch-In Mode

Punch-in Recording Using an External Control

To avoid accidentally erase notes and other data when recording faders, do one of the following:

- Record-enable an empty track

OR

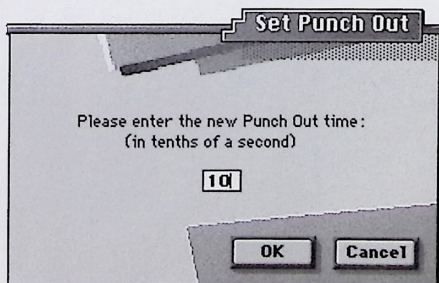
- Record-enable any track and turn on Overdub Record mode

To enable Auto Punch-In mode, select it from the mini-menu. A check appears next to it indicating that it is activated.

To record data when punching in, press the Record button in the Consolidated Controls panel and move the control item. When the control item moves, data in the track of the same type as what the control item is sending will be replaced by the new control item data, just like normal control item recording. When you release the control item, recording will stop and it will return to monitoring the track.

Moving the control item from an external control while punching in works much the same way: to punch in, the control item waits to receive an event from its external controller. When it does, it punches in. Punch out, however, is done automatically by Performer and is determined by the amount of time after the last event was received from the controller.

Since controllers send data with different degrees of sensitivity, you may find that punch out occurs too frequently. To avoid stuttering punch out, you can lengthen the delay before Performer punches out with the Set Punch Out command in the console window mini-menu.



Summary

The Set Punch Out dialog box allows you to determine the punch out delay in tenths of a second. Usually, values between 5 and 15 work well.

Here are several situations and a description of what control items will do in each case:

Performer is not playing or recording: When the current location of the sequence is changed with the Controls or Counter Window, all control items jump to the value of their assigned parameter on their assigned track. They may then be moved; as they move they send out MIDI data of the assigned data type on the channel(s) of their assigned track.

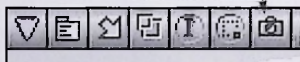
Performer is playing back: As Performer plays, the control items animate to reflect the values of their target data type from their target. A control item may be grabbed and moved independently, either by simply grabbing the handle or by external control; it then transmits MIDI data that takes the place of out-going data from its source track. The data it generates does not get recorded. When the control item is released, it returns to tracking the target track.

Performer is recording: When Performer is recording, a control item is either in or out of Punch-in mode. Here is what happens in each condition:

- **With Punch-in mode,** the control item simply monitors its target, just like playback. When you move it with the mouse, it records your movement. Data in the target track is replaced by data generated by the control item. (Only data of the same type is replaced). When the control item handle is released, the control item starts tracking the target track again.
- **Without Punch-in mode,** a MIDI event corresponding to the current position of the control item is inserted into the target track(s). As recording continues, old data is either erased or replaced by new data of the same type generated by control item motions. Only data of the type assigned to the control item is affected. For example, recording a pitch bend control item would replace any existing pitch bend data with new data; notes, controller data, etc. would be unaffected.

Taking a Snapshot of a Console

Snapshot button



Once you have created your custom console, you can take a snapshot of it. A snapshot captures all of the current slider and knob settings. The snapshot is placed into the tracks of the currently play-enabled sequence.

If you would like to record the snapshot, the target assignment of the sliders and knobs must be either a track or a device (instead of a MIDI channel).

To take a snapshot of the current position of the sliders, knobs, and buttons in a console:

1. **Set the main counter to the desired location at which you wish to record the snapshot.**

You can also take the snapshot during playback or recording.

2. **Set up the sliders, knobs and other control items the way you would like them to be in the snapshot.**
3. **Select the control items in the console that you want to include in the snapshot.**

See “Selecting Control Items” above.

4. **Click the Snapshot button in the title bar.**

When you click the snapshot button, each control item generates a MIDI event at that instant. The value of the event, such as the level of a volume controller, is determined by the control item's position at the time the snapshot is taken. The event is inserted into the control item's target track. If you have taken the snapshot of many sliders, knobs, etc., each item places its data into its own target track.

Editing a snapshot

Once data has been inserted into one or more tracks by taking a snapshot, the data can be edited in the standard fashion in the track(s). For example, if you wanted to remove the snapshot, select the data in the tracks window and delete it.

Animation During Playback

Unless the control item is being dragged, it monitors its target track, animating during playback to reflect MIDI data that it has recorded into the track.

Using Controllers Above 63

Grouping Control Items

Master and Slave control items

In general, the control item always reflects the current value of its target data type, even when cueing the sequence to a different playback location. For example, press the rewind button of the sequence. The volume control item will snap to zero. Now, type in measure 5 into the Counter window and press the return key. This sets the current playback position at measure 5. When you do so, the volume control item will snap to whatever the value of controller #7 is at measure 5.

Only controllers 0 to 63 are considered to be “continuous” MIDI controllers—ones that can express any value between 0 and 127. Controllers 64 to 120 are defined by the MIDI specification as “switch” controllers—ones that are either on or off. Controllers 121 to 127 are reserved for special purposes.

Some MIDI hardware, however, treats controllers 64 to 120 as continuous controllers. Performer’s control items can generate any controller from 0 to 120 as continuous data, providing you with maximum flexibility with MIDI devices that treat controllers 64 to 120 as continuous controllers.

Performer’s custom consoles provide the ability to group control items together and control them from a master control item. Grouping allows you to control an entire bank of controls at the same time from one control item. Up to 32 control items can be assigned to a single group, and Performer allows up to 26 groups, identified by a letter from A to Z. Any control item can be a master control item or a grouped control item.

In addition, a master control item that controls a group can, in turn, be a member of another group controlled by another master. This allows you to create sub-groups of control items, and sub-groups within sub-groups. There is no limit to the number of layers you can create.

Each control item in the group can have its own, customized relation to the group’s master control item. Grouping provides three ways in which a control item (slave) responds to its group master: the grouped control item can **match**, **offset**, or **scale** values received from the master.

When **matching** the master, the slave simply goes to the same value as the master. For example, if the master control item is set to 79, the slave goes to 79 as well.

When **offsetting** the master, the slave can start at a different value than the master. When the master moves, the slave moves by the same amount, or by a percentage of the amount. For example, let's say that the master is at 0, the slave is at 20, and the slave is offsetting by 100%. If you move the master to 50, the slave will move to 70. If the slave is offsetting by 50%, it will only move to 45, which is 20 plus half of 50 (25).

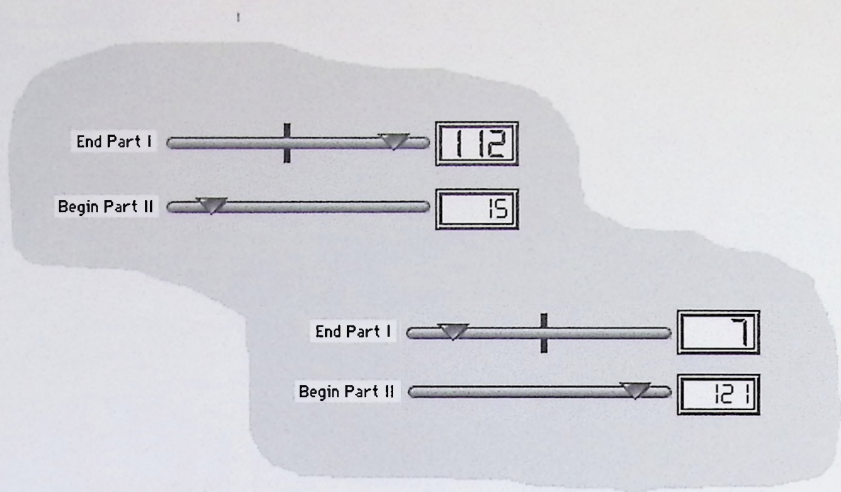
When **scaling** the master, the slave can start at a different value than the master. When the master moves, the slave moves by a percentage of the distance that the master moves in its relation to the end of the control item. For example, let's say that the master is at 0, the slave is at 64, and the slave is scaling by 100%. When the master moves to 64, which is half way to the top, the slave moves to 96, which is half way of its distance to the top. If the master goes to 96, which is $\frac{3}{4}$ ths of its distance to the top, the slave goes to 112, which is $\frac{3}{4}$ ths of its distance to the top. By the time the master has reached 127, so has the slave.

Slaves can be offset or scaled by a percentage between 0 and 999%.

Polarity

In addition to matching, offsetting, and scaling, a slave can react positively or negatively to its master. **Positive polarity** causes the control item to move in the same direction as its master. **Negative polarity** causes the control item to move in the opposite direction from its master.

Negative polarity is extremely useful for many musical effects, such as cross-fading or panning. You can bring the volume of one track up at the same time as you bring the volume of another track down.



In this example, "End Part I" is the master and is being faded down from right to left. As it does, "Begin Part II" fades up from left to right.

Null Points

In the grouping offset and scaling examples above, you may have noticed that an important part of how masters and slaves work is *their initial values*. In Performer, the master's initial value is called the **null point** and the slave's initial value is called its **reference value**.

A master's null point is the value of the master slider on which changes to slaves are based. It is indicated on a slider as a bold hash mark behind the slider bar.

The slave's reference value is its value when the master is at its null point. Whenever you would like to see the reference value of a slave, move its master to its null point.



Moving Slaves Independently of Their Master

Assigning a Control Item to a Group

The slave responds to *changes* in the master slider's value, which are measured from the master slider's null point, and it moves from its reference point based on those changes. As the master moves from its null point, the slave moves from its reference value.

Performer's null point is similar to the null point on most recording studio mixing consoles: it is a base value from which slaved sliders are measured.

Hardware mixers usually have a fixed null point somewhere near the middle of the slider's range. The null point of Performer's sliders, however, can be set to any value on the slider, from zero to 127 (or -8192 to 8191). This provides an added level of flexibility when achieving the musical effects that you want.

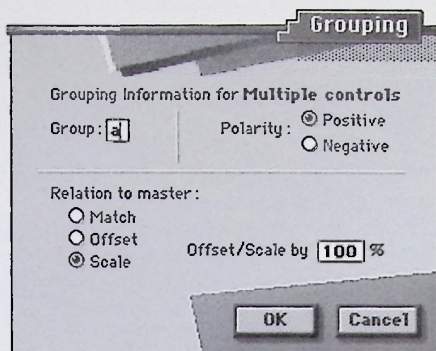
Slaves always follow their master. However, a slave is not "locked" by the master; it can be moved independently at any time, regardless of the master's current value (position). When you move a slave, you are changing its reference point with respect to the master. In addition, its relation to the master is temporarily severed. The only way to reestablish the connection is to move the master, or reset the master to its current value.

If you move both a master and a slave at the same time from the same external source, you will sever the master/slave connection between them and the slave will track the external source as if it was not connected to the master.

To assign a control item to a group:

1. **Select one or more control items.**
2. **Choose *Group* from the console window mini-menu.**

The Grouping dialog box will appear.



3. Type the group letter to which you want to assign the control item.

The only restriction here is that a control item cannot be the member of a group if it is already the master of that group. Up to 32 control items can be included in one group.

4. Select the polarity.
5. Choose whether to match, offset, or scale from the master.

If you want the grouped control items to reach their highest and lowest value at the same time as the master, choose scale at 100%, which is perhaps the most intuitive way to group control items.

6. Click OK to confirm your choice or Cancel to withdraw it.

Assigning a Master Control Item

To assign a master control item:

1. Unhighlight the Edit Mode button in the console title bar and select the control item.
2. Choose Control Assignment from the mini-menu.
3. Type a letter in the Group text box.

You can enter any single letter. The only restriction is that the control item cannot be a master of its own group.

4. Choose the Master option.
5. Click OK.

Setting a Master Slider's Null Point

To change the null point of a master slider:

1. **Option-click anywhere on the slider.**

The null point, which is indicated by a bold hash mark, will snap to the location, and you can drag it freely from there.

The null point can also be changed more precisely as follows:

1. **Select the master slider.**
2. **Choose Control Assignment from the console mini-menu.**
3. **Make sure the Master radio button option is selected.**
4. **Type in the desired null point in the box provided.**
5. **Click OK to confirm your choice or cancel to withdraw the command.**

Setting a Slave's Reference Value

To change the reference value of a slave, move the master back to its null point, and then move the slave to the desired value. It is not mandatory to move the master to its null point beforehand, but if you do not, the value you are setting is the *actual* reference value and does not reflect the current difference between the master and its null point. As soon as you move the master again, reestablishing the master/slave connection, the slave will pop to its new relative position, often causing an unexpected result.

Moving a Master to its Null Point

To move a master to its null point, either drag the master's handle to the bold hash mark, or highlight the slider and choose Goto Null Point from the Slider window or Console mini-menu.

Sending Multiple MIDI Messages At Once With Grouped Buttons

You can group buttons to a master button to send various messages to various destinations all at once. Just assign each button to the same group. Make sure each button is of the same type. Then create a master button that is also the same type. When you press the master button, the slaved buttons will be pressed and released at the same time.

- ☛ Please note: if you group buttons, the slaved buttons do not animate when you click the master button. They do, however, transmit data.

Generating Sysex with a Slider or Knob

Performer allows you to generate system exclusive data from a slider or knob. The slider generates a continuous stream of messages, each containing a range of bytes (up to four) that are changed incrementally by the slider or knob.

Doing so allows you to control device-specific parameters of MIDI hardware in ways that can not be achieved with continuous controller data.

☞ Please note! This section is not for the technically faint of heart. You should have a firm knowledge of MIDI, and you should be familiar with your hardware's MIDI implementation.

Before you begin this procedure, here's what you need to know about the sysex message:

- The message itself, or how to dump it into Performer
- Whether or not the message contains a checksum, and if so, how many bytes the checksum consists of
- What the data bit format is (7-bit or 4-bit nibble)
- Which comes first, the LSB or the MSB
- The specific bytes within the message that will be the variable bytes controlled by the control item (up to 4 bytes)

To set up a control item that generates sysex, you must first enter the sysex data into Performer, and you have two choices for how you can do so. You can:

1. Type it in by hand
2. Type in a request message and record it from the synth

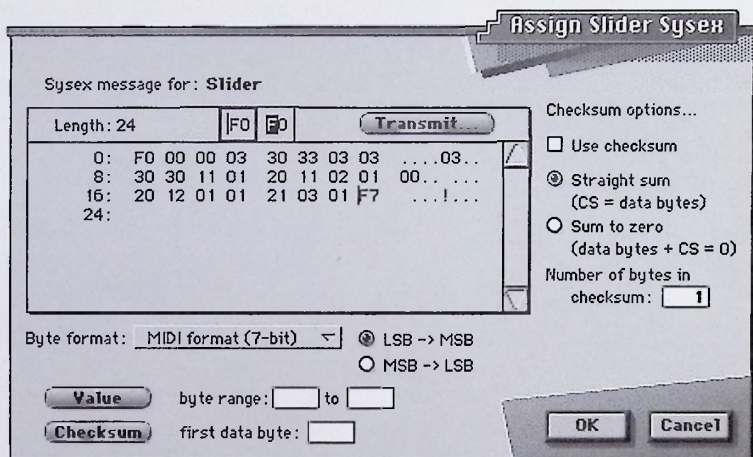
To set up a sysex slider or knob:

1. Create the slider or knob.

If the sysex message you'd like to control was recorded as a bulk dump into a device, be sure to assign the target to the device.

2. Select it and choose Control Assignment from the console mini-menu.
3. Choose system exclusive from the Target data type pop-up menu.
4. Click the Sysex setup button.

The Assign Slider Sysex window appears.



If you want to type in the sysex message, type the message into the sysex editor. For more information about how to use this editor, see the System Exclusive chapter.

If you would like to enter a bulk dump request message, click Transmit. Performer's standard sysex editor window appears, into which you can type in the bulk dump message. See the System Exclusive chapter if you need more information.

Choosing the Variable Data Bytes

Once you have the sysex message you want in the sysex editor display, you can now select which data bytes are to be the variables that will be controlled by the slider.

To select the variable data bytes:

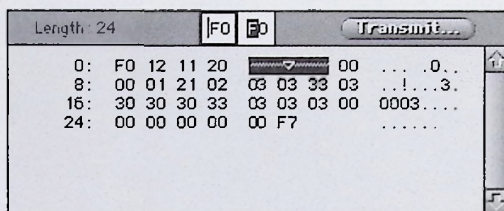
1. **Choose replacement mode for the edit cursor so that you can highlight the desired bytes.**

2. **Select the desired data bytes.**

You can select up to four bytes.

3. **Once the bytes are selected, click the Value button.**

Notice that the bytes now turn into a slider.



Note: if the sysex message is a device bulk dump, several sliders can edit the same bulk dump message.

To see the values of the bytes being covered up by the slider, use the arrow keys to scroll the insertion cursor through the bytes. When it passes through the slider, the slider disappears for a few seconds.

Setting the Checksum

If the synth requires a checksum, Performer must generate the proper checksum as well, and it needs to know an initial value to do so.

To set the initial checksum value:

1. **Click the *Use Checksum* check box.**
2. **Select either the *Straight sum* or *Sum to zero* option.**
3. **Type in the number of bytes for the checksum value.**

Setting the Bit Formats

Monitoring a Sysex Slider During Playback

4. Identify the first data byte that is checksummed.

To do so, type in the byte number next to the Checksum button, or place the cursor at the first byte of checksummed data (normally the first byte immediately after the sysex header) and click the Checksum button.

Select the appropriate bit format from the pop-up menu and select either LSB-->MSB or MSB-->LSB.

You are done! Click OK. The slider will now generate the sysex message. If the synth does not respond, verify the checksum values.

Sysex sliders cannot monitor the data they generate. This is due to the amount of data processing that would be required in real time.

Here is a work-around for this problem:

- 1. Create two sliders.**
- 2. Make one the master and the other a slave.**
- 3. Make the Master slider generate an unused controller and assign its target to a track.**
- 4. Make the slaved slider read that unused controller from the same track as its source.**
- 5. Then make the slaved slider generate the sysex data.**

In this scenario, you move the master slider. It generates controller data at the same time that it is controlling the sysex slider, so that the sysex slider matches its movement. On playback, the sysex slider monitors the controller data and generates the sysex. Thus, the sysex data never gets recorded in the track; only the controller data does. But the controller data and sysex data match because they were slaved when originally recorded. The end result is that the sysex slider animates and plays back exactly as it was recorded.

Hints

Remapping Continuous Data

Control items can serve many purposes. Some suggestions are discussed below.

Control items can be used for remapping continuous controller data in real time. For example, you may have a synth module that responds to controller #10 (MIDI Pan), but you may not have any keyboards that can send this particular controller. A control item can solve this problem by remapping a controller that your keyboard *does* send into controller #10. To do so, assign the source of a control item to be a controller that your keyboard can transmit, such as controller #1 (mod wheel). Set the control item's target to be the Device or track that sends to the synth module. Set the target data type to controller #10. Now, when you send controller #1 data from your keyboard by moving the mod wheel, you will be controlling the Pan settings on your synth module.

Control Items also offer a way to reassign continuous data in real time instead of using the Reassign Continuous data command. For example, you may have a track of controller #3 continuous data that you wish to change to controller #7. You can set up the source of a control item to be the track containing controller #3. In turn, you can assign the target data type to be controller #7, and assign the control item to send the data to a different target track. When you press record, the control item will read in the controller #3's and generate controller #7's, which in turn will be recorded into the target track.

Improving Console Animation

Performer's first priority is to keep up with the flow of MIDI data. If it encounters a great deal of data, it selectively ignores its graphic display until the microprocessor load decreases. This may affect the animation of control items, and they may not move smoothly when lots of data is being played—especially if there are many control items on the screen. This is Performer's way of keeping up and does not necessarily mean that MIDI data is being transmitted inaccurately.

Performer gives the currently active window highest priority when animating control items. Therefore, whenever you want to watch control items while Performer is playing back, make sure their window is active. To activate the window, simply click anywhere on the window.

Loading Control Items and Consoles From Another File

If the control items you want to watch are in different consoles, you may want to create another single console that contains all of the control items you wish to monitor during playback. You can then make it the active window, and all of the control items in it will animate as smoothly as possible. You will find that as long as the console is active, Performer does a pretty good job of animating control items accurately.

Another way to improve control item animation is to close as many consoles as possible.

Consoles from one Performer file can be imported into any other Performer file using the Load command, found in the File menu. This means you can set up control items the way you like them, once, and they'll be available for importing into any of your files.

The Consoles that you create in a file are automatically saved as part of that file. The Load dialog box, however, enables you to extract them from an unopened file, then load them into the file in which you are working.

To load Consoles into an open file:

- 1. Choose *Load* from the File menu.**

The standard Macintosh Open dialog box appears.

- 2. Click the file containing the assignments you wish to load, then click *Open*.**

Alternately, you can double-click the file name. Performer's Load dialog box appears, displaying the file name at top.

- 3. Choose the *Load Consoles* option.**

- 4. Optional: If you wish to load any Chunks from the selected file, choose the *Load Chunks* option and either the *Data* or *Link* sub-option.**

If you wish to load more than one Chunk, you can drag to select contiguous Chunks and shift-click to select discontiguous Chunks. Deselecting this option loads only the file's Control Items.

Sending note-ons and note-offs with sliders, knobs, or buttons

Creating a Mute Button

Automating a Fader Group with a Master Control

5. Click OK to confirm your choice(s) or Cancel to withdraw the Load command.


Clicking OK causes the selected file's Consoles, as well as any selected Chunks, to be loaded into the open file. The imported consoles appear in the Windows menu.

When you program a button or slider to generate notes as shown below by the "Send" pop-up menu, you have three possibilities:

1. Send notes (both note-ons and note-offs)
2. Send note-ons only
3. Send note-offs only

For option 1, leave both check boxes unchecked. In this case, the slider, knob, or button will send a note-on when you click it, and it will send a note off when you either release it or move it to another note.

For options 2 and 3, click the appropriate check box. In this case, the slider, knob, or button sends only a note on or a note off when you click it or move it.

 Please note: note-ons and note-offs by themselves do not constitute an entire note. Therefore, they cannot be recorded into a track.

To create a mute button, create a button as described in the section "Creating a Button" on page 521. For the maximum value, click the "unmute button" as shown in Figure 31-1 on page 523.

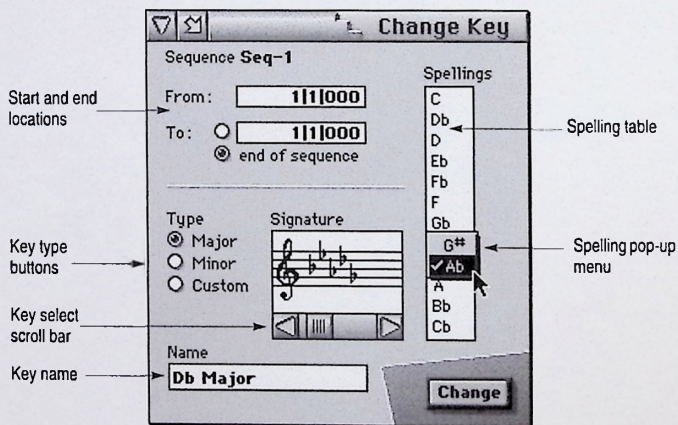
Master console controls can control their slaves while monitoring a target track. This means you can automate the movement of many slave controls at once by recording only the data of their master control. For example, you can automate a master fade-out at the end of a sequence by slaving multiple sliders (one for each track or device in your sequence) to a master slider and then recording the master slider. When you play back the result, the master slider monitors the data you recorded in its target track and simultaneously drives the volume sliders for all other tracks. To accomplish this, make sure that the master slider target assignment is a track (or a device which is assigned to a track).

- Remember that the master slider's track must be play-enabled for this to work. (It can't be muted.) As a result, you might consider assigning the master slider's track to a MIDI channel that you don't use. Also, since the target data type for the master slider doesn't matter (as long as it is some type of continuous controller), you might consider using a target data type for the master slider that is unlikely to affect anything else (like controller number 45).

Chapter 32 *Change Key*

Key signatures provide a way to interpret MIDI note data. In music notation, there are several ways to write every pitch. For example, although G sharp and A flat sound the same and describe the same pitch, a G sharp would make less sense in the key of E flat than an A flat would. Performer allows you to specify key signatures in your sequences, making the display of notes in the Event Editing windows clear and musically accurate. Key signatures are also extremely important when viewing a sequence in music notation with Performer's QuickScribe notation window; setting the correct key signatures ensures that the music will be properly notated.

Quick Reference



Start and End Locations: Displays the region over which the key change occurs. Click on a value to highlight it, and type the desired starting and ending measure locations. After each change is made, the From location is set to the previous To location. Click on the *end of sequence* button to change key from the From location to the end of the sequence.

Basics

Performer's Key Signatures

Key type: Click on the appropriate radio button to select a Major, Minor, or user-defined Custom key.

Key Signature Scroll Box: Use the scroll bar and arrows to select the desired key signature. Changing the key in this box automatically updates the key name and spelling table.

Key Name: Displays the name of the key signature. The name appears as the key change event in the Event Editing windows. The name is set automatically when the Major or Minor key types are chosen. Click the name and type to change it.

Spelling Table: Displays the spelling of the twelve chromatic notes for the currently selected key. Change a spelling by pressing on the note letter and selecting the desired spelling from the pop-up menu that appears.

Key signatures in the Conductor track of a sequence apply to all the tracks in the sequence. At any given location, there can be only one key signature for all tracks. You can have as many key changes as you like in a sequence.

Key changes appear for reference in all track Event Editing windows. They may be edited only in the Conductor track, either directly in the Conductor track Event Editing window or from the Tracks window. Each key change affects the spelling of notes to just before the beginning of the next key change. *Key changes only affect the display of note pitches; they do not change the actual MIDI data in your sequence.*

If there is no key signature entered at the beginning of the sequence, the default key is C major (no sharps or flats).

It is possible to put key changes in the Conductor track of a song, but they will have no effect on the spellings of notes in sequences contained in the song. Only key changes in the Conductor track of the sequence will affect notes within that sequence.

Key signatures in Performer actually have two components: the standard key signature (up to seven sharps or seven flats), and note-spelling assignments for non-diatonic notes (notes not in the basic scale of the key). A key has five non-diatonic notes; Performer allows

you to decide how each of them will be spelled. In the key of D, for instance, you can name the note that lies between B and C sharp either B sharp or C natural.

You can choose from three types of key signatures:

- *Major*: Any key from C sharp major (7 sharps) to C flat major (7 flats)
- *Minor*: Any key from A sharp minor (7 sharps) to A flat minor (7 flats)
- *Custom*: You can choose a signature with 7 sharps to 7 flats and call it what you wish. This is useful for modal key signatures: C Phrygian, for example, has 4 flats. The key signature name is only for your reference: only the key signature itself is displayed on the staff in the QuickScribe notation window.

To set a key signature or add a key change:

1. Specify which sequence the key change affects.

If a Tracks window is active, the key insertion will apply to that sequence. If the Chunks window is active, the key insertion will apply to the highlighted Chunk or, if no Chunk is highlighted, to the current play-enabled Chunk. If an Event Editing window is active, the key insertion will apply to whatever sequence it belongs to.

2. Choose Change Key from the Change menu.

A dialog box will appear. Notice that the name of the sequence in which the key change will be placed is displayed at the top of the dialog box.

3. Specify the *From* and *To* locations.

These locations specify the starting and ending locations for the key change. Click on the fields and enter the desired measure | beat | tick values. If you have just entered a key change, the From location is automatically set to the previous To location. Click on the *end of sequence* button to change key from the From location to the end of the sequence.

4. Specify the type of key signature to be inserted.

Click the options for major, minor, or custom, as explained above.

5. Use the Key Signature Scroll bar to select the key signature.

Use the scroll bar and arrows to choose the desired number of sharps or flats. The key name and spelling table are automatically updated as you scroll.

6. Enter a name for the key change.

Optional: If you have chosen a Major or Minor type, the name is automatically set.

7. Choose the note spellings for each non-diatonic note in the key.

Click on each note to select it and choose the desired spelling from the available ones displayed.

8. Press the Change button to enter the change.

The Change button enters the key change and leaves the dialog box open so that you can insert more key changes.

You can repeat this procedure to enter as many key changes as you wish. When you are done entering changes:

9. Click on the triangular Close box at the top left to close the dialog box.

Viewing Key Changes

Key changes in a sequence can be viewed in two places: in the Event Editing windows for each track and in the Conductor track for that sequence. Key changes can be edited only in the Conductor track: they cannot be modified in the Event Editing windows for standard tracks. Key changes can be omitted from the editing windows by turning off their display with the View Filter.

Editing Key Changes in the Conductor Track

Key changes can be edited directly in either Event Editing window (Event List or Graphic Editing) for the Conductor track. This section discusses the editing of key changes in the Event List window. See the chapter *The Graphic Editing Window* for details on editing Conductor Track information graphically.

In the Event List for the Conductor Track, the location of a key change can be edited by altering its starting time. The key change itself may be modified by Option-clicking on it. The Change Key dialog box appears in which you can enter the modification. The box that appears is slightly different than the one chosen with the Change Key command: the Change button is replaced by OK and Cancel buttons, and the sequence name and From and To location fields are missing. Otherwise, this box works exactly as described above.

To edit a key change in the Event List window for the Conductor track:

1. Double-click on the Conductor track in the Tracks window.

An Event Editing window will open. If the Graphic Editing window appears, go to the mini-menu on its title bar and choose Event List. The Event List window for the Conductor track will appear.

2. Option-click on the key change event that you wish to change.

If necessary, use the scroll bar to locate the desired key change event. The Change Key dialog box appears.

3. Change the key type, signature, name, and spelling as desired.

See the section above on entering key changes for information on these fields.

4. Press OK to confirm your changes or Cancel to cancel them.

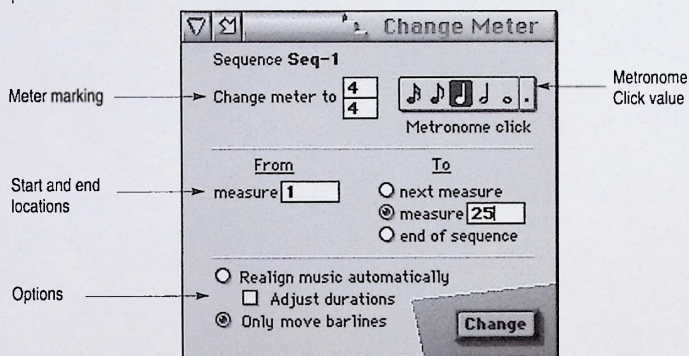
You can apply the commands from the Edit menu to key changes in the Conductor track: key signatures can be cut, copied, pasted, spliced, etc., just like other events. The region to edit in the Conductor track may be selected by highlighting events in its Event Editing window or clicking on the Conductor track to highlight it and specifying a region in the Edit bar. Key change information can be included in an edit operation involving note and other MIDI events by including the Conductor track along with the selected tracks.

***Using the Edit
Commands with Key
Changes***

Chapter 33 *Change Meter*

Meters specify the way musical time is counted and measured. In Performer, meters affect the way measure | beat | tick locations are displayed in the Counter, dialog boxes, and Event Editing windows. Meters also affect the Click and countoff. In addition, they impact the way information is displayed in Performer's QuickScribe notation window. The Change Meter command allows you to enter any number of meter changes in a sequence.

Quick Reference



Meter Marking: Displays the meter in standard musical format. Click on the numerator and/or denominator and type in new values to change it.

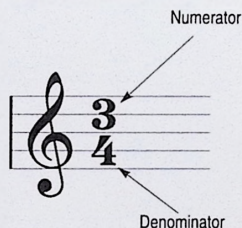
Start and End Locations: Displays the region over which the meter change takes effect. Click in the From box to set the starting location. Click in the To box to set the ending location. Click on the *end of sequence* button to extend the region to the end on the sequence.

Basics

Options: Click on the appropriate radio buttons and/or check box to select the desired options. The *Only move barlines* option does not affect the actual events in the sequence. The *Realign music automatically* and *Adjust durations* options erase or change events to fit the meter.

Metronome Click value: Displays the duration between clicks and between counter updates. Click on the desired note value. Click on the dot for dotted durations (i.e. one and a half times the chosen note value).

A meter consists of a beat value and the number of beats per measure. The beat value is generally the rhythmic pulse or beat of the music; a measure consists of a certain number of these beats. Performer displays meters in the standard musical fashion as a fraction, with the beat value in the denominator (on the bottom) and the number of beats per measure in the numerator (on top). In Performer, the numerator can be a value between 1 and 99. The denominator must be a power of 2 (1, 2, 4, 8, 16, 32, or 64).



A Meter Change event in Performer consists of a meter displayed in this way, along with a metronome click value. This value determines the spacing between the sounds and MIDI events produced by the Click feature. It also determines how often the Counter is updated during playback or recording.

The meter's denominator value, the beat value of the current tempo and the metronome click value are all related, though they need not be set to the same value. You may wish to have a meter of 4/4 with a tempo of half note = 180 with the metronome clicking every eighth note. The ability to use separate values allows a great deal of flexibility and accuracy during recording.

Using the Change Meter Dialog Box

If a sequence or song contains several meters, the resulting configuration of meters is termed a "meter map". This map is simply the complete set of programmed meter changes for an entire sequence. These changes are displayed in the Event Editing windows for each track in the sequence. The meter changes for a given sequence or song can only be altered in its Conductor track.

It is often useful to set up the meter map before recording the music, this way the measure locations of the events you record will stay consistent through the recording and editing process. If you change meter after recording a track or tracks, the measure | beat | tick locations of the events may change.

Inserting a new meter may or may not have an audible effect on the music. Depending on the options you select for inserting a new meter, note events may be excluded and durations may change. These options are explained in detail below.

Performer starts a new bar at every meter change. Thus, if a meter change is inserted in the middle of a measure, that measure will terminate early, and a new one will begin with the meter change event.

To enter a meter or meter change:

- 1. Specify which Chunk (sequence or song) the meter insertion affects.**

If a Tracks window is active, the meter insertion will apply to that sequence. If the Chunks window is active, the meter insertion will apply to the highlighted Chunk or, if no Chunk is highlighted, to the current play-enabled Chunk. If an Event Editing window is active, the meter insertion will apply to whatever sequence it belongs to.

- 2. Choose Change Meter from the Changes menu.**

The Change Meter dialog box will appear. The name of the Chunk in which the meter insertion will be placed is displayed at the top of the dialog box.

- 3. Enter the numerator and denominator of the meter to be inserted in the boxes next to the words *Change meter to*.**

Click in each box and type in the numbers. The numerator must be a value between 1 and 99. The denominator must be a standard note value: 1, 2, 4, 8, 16, 32 or 64.

- 4. Choose the metronome click value.**

Click on the note value you want the metronome to click on. If you want a dotted note value, click on the dot in addition to the note value.

- 5. Enter the beginning measure of the region which the meter change should affect.**

Click in the box under the word "From" and type in the beginning measure number. When you press the Change button the From value is automatically set to the previous To value.

- 6. If you are going to be entering a series of meter changes quickly, choose the Next Measure option.**

This option lets you press the enter key once for each measure. If you have several measures in a row in the same meter, just press the enter key once for each measure. The "from" measure is automatically updated as you do so. This lets you enter meter changes efficiently for an entire sequence by quickly pressing the enter key repeatedly as many times as necessary for measures with the same meter. When you need to the meter changes, type in the new meter and press enter again as many times as necessary for the new meter. Keep going as long as necessary.

- 7. If you are entering a meter change over a fairly long region, choose either one of the two remaining options; if necessary type in the end measure of the region.**

There are two options here: you can either specify a particular measure or the end of the sequence (or song). Click on the button next to the option you want. If you choose the specific measure option, click in the text box next to the word *measure* and type in a measure number.

The Metronome Click Value

The Measure Range

Realign Music Automatically

8. Choose to realign music in the region and adjust durations if you wish.

To realign the music, choose the Realign music automatically option. If you wish to adjust the durations of notes in the region, click in the Adjust durations box. If you wish to leave the music unaltered, click in the Only move barlines button. A full explanation of these options is given below.

9. Press the Change button to enter the change.

The Change button enters the meter insertion and leaves the dialog box open so that you can insert more meters.

10. To close the Change Meter dialog box, click in its close box.

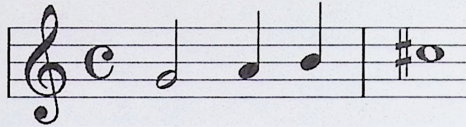
The metronome click value you specify will be associated with the meter change you choose. You can specify a different metronome click value for each meter change. See the chapter *Click and Flash* for more on the Click feature.

When you enter a range of measures, Performer will change the meter up to but not including the *to measure*. The *to measure* does not change; it remains in the same meter as before the operation. This is very similar to the way most edit/region operations work; events at the end time are not affected. If you choose the *end of sequence* option, the meter change will continue to the end of the sequence, no matter how the sequence may change.

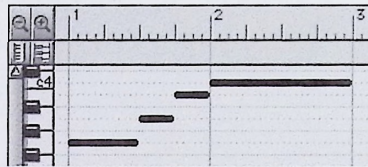
For example, assume a sequence is completely in 4/4. Entering a change to 3/4 from measure 8 to measure 12 will place a 3/4 meter change in measure 8, and a 4/4 meter change in measure 12. The result is that measures 8 through 11 are now in 3/4, and measure 12 remains in 4/4.

This option allows you to maintain the metrical structure of each measure by deleting some note events and changing the durations of others. There is a sub-option, Adjust durations, which is discussed below. The following assumes that the Adjust durations box is *not* checked. When you change the meter of a measure that contains note events with this option on, beats are either added or removed according to the new meter you specify. If beats are added, rests are inserted for the new beats. If beats are removed, any note event

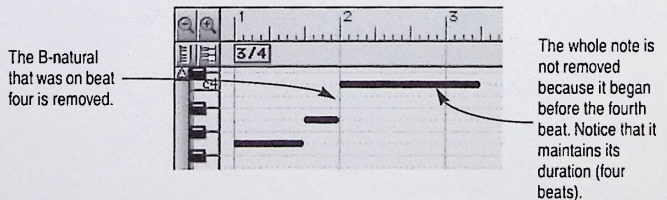
occurring in the removed beat will be removed as well. The durations of note events that start before the deleted beats are preserved. For example, suppose you have the following two measure passage in 4/4 time:



Graphically, the durations would be represented like this:

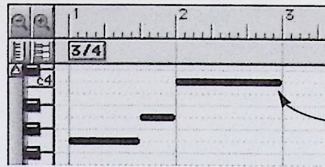


Changing the meter to 3/4 and using the Realign music automatically without adjusting durations, the fourth beats would be removed. This would remove the quarter note in the first measure but not the whole note since it began before the deleted (fourth) beat:



Adjust Durations

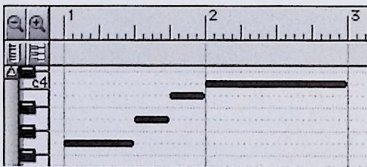
The Adjust durations sub-option can only be used when the Realign music automatically option is selected. The Adjust durations sub-option alters the durations of notes that begin before the removed or added beats. The durations are altered to conform to the new measure boundaries. In the example above, the original version in 4/4 has a note lasting the whole second measure. With the Adjust durations option on, the duration of this note is altered such that the note will last for the entire measure in the new meter:



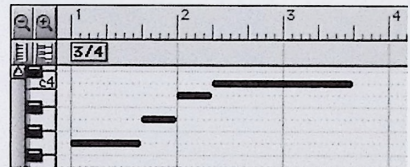
The duration of the four-beat whole note is truncated to fit the new 3/4 measure.

Only Move Barlines

This option does not change any durations. It imposes the new barline structure over the music, keeping all durations the same. The above original 4/4 passage would look like this with the Only move barlines option:



Original music



Realigned using the *Only Move Barlines* option

Viewing Meters

The meters in a sequence can be viewed two places: in the Event Editing windows for each track and in the Conductor track for that sequence. Meters can be edited only in the Conductor track; they cannot be modified in the Event Editing windows for standard tracks.

The meters in a sequence will appear in the Event Editing windows for all tracks in that sequence. Meters can be omitted from the editing windows by turning off their display with the View Filter. Conversely, the entire meter map may be viewed alone by turning off the display of all other types of events.

Editing Meters in the Conductor Track

Meter changes can be edited directly in either Event Editing window (Event List or Graphic Editing) for the Conductor track. This section discusses the editing of meter changes in the Event List window. See the chapter *The Graphic Editing Window* for details on editing Conductor track information graphically.

Using the Edit Commands with Meter Changes

Hints and Examples

To edit a meter change in the Conductor track Event List window:

- 1. Double-click on the Meter Change event you wish to edit and enter the new values.**

Use the Tab key to move from field to field. The location and meter marking fields are edited like standard event values. Editing the metronome beat value field calls up a small pop-up box with note symbols for the possible values. Click on the note corresponding to the value you desire.

- 2. Press the Return key to confirm the changes, or Command-period to cancel them.**

Clicking anywhere else on the screen will also cancel the edit.

You can apply any editing command to meters in the Conductor track: they can be cut, copied, pasted, spliced, etc., just like other events. The region to edit in the Conductor track may be selected by highlighting events in its Event Editing window or clicking on the Conductor track to highlight it and specifying a region in the Edit bar. Meter information can be included in an edit operation involving note and other MIDI events by including the Conductor track along with the selected tracks.

Editing meter changes can be confusing. If you feel that your meter map has become too complicated, has errors that you can't easily detect, or has somehow become excessively complex, you can delete it and re-enter it correctly from the start.

To erase the current meter map:

- 1. Activate the Tracks window for the sequence with the meter map you wish to erase.**

Click in the window to activate it.

- 2. Double-click on the word "Edit" in the Edit Bar.**

This loads the start and end times of the entire sequence in the Edit Bar.

- 3. Select the Conductor track by clicking on it.**
- 4. Choose Edit Filter from the Edit menu.**

5. Uncheck all check boxes except for meter changes.

Hold down the Option key and click on the meter change check box. Now the Edit commands will only affect meter changes.

6. Choose Erase from the Edit menu.

This gets rid of all the meter changes for the sequence.

7. Choose Edit Filter from the Edit menu.

8. Restore your previous Edit Filter setting.

You should always reset the Edit Filter after using it.

Be careful when pasting into the Conductor track: pasting *replaces* events of all types selected in the Edit Filter. This may be what you want. If, however, you are just rearranging meters and wish to leave the other data where it is, make sure to set the Edit Filter for meter changes only.

Here's a method for inserting a number of new bars with a different meter into your sequence.

1. Shift over the sequence to make room for the new bars.

Enter the insertion point for the new bars in the Start time in the Edit Bar and double-click on the End time to set it to the end of the sequence. Then choose Shift from the Edit menu, and enter the number of bars you want in the current meter.

2. Choose Change Meter from the Change menu.

3. Set the From and To locations for the meter change.

Enter the beginning location of the new bars in the From field. Add the number of bars being inserted to the beginning time. Enter this in the To field.

4. Click on the Realign Music Automatically option.

Leave the Adjust durations box unchecked. This option adds or subtracts the necessary number of beats to ensure that new measures line up with the new meter.

5. **Click on the Change button.**

This enters the meter change.

6. **Click on the close button to close the dialog box.**

Chapter 34 *Change Tempo*

Tempo is very flexible in Performer. Not only can there be several tempos in a Chunk (sequence or song) but they can change dynamically, resulting in accelerandos, ritards other programmed tempo effects.

In Performer, tempo is controlled by the Metronome panel in the Consolidated Controls panel. The metronome provides three possible settings for tempo control:

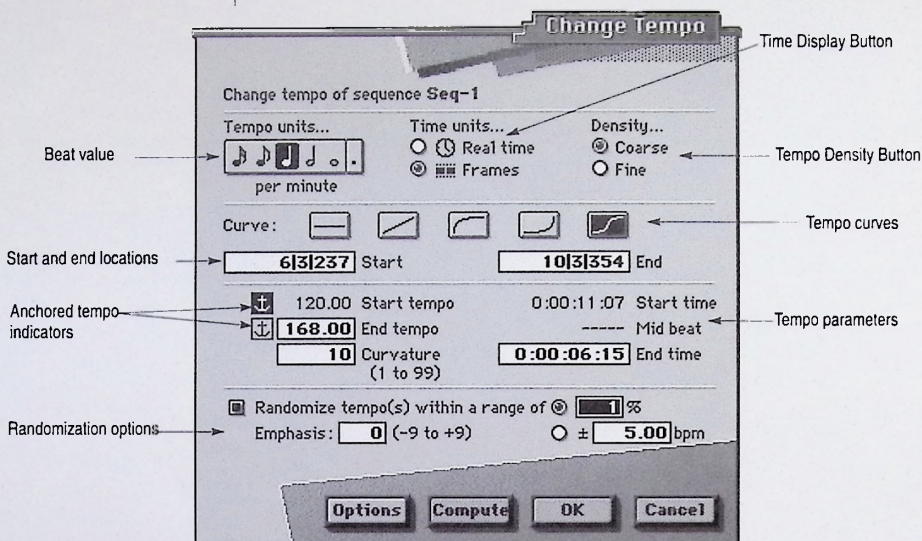
- The Tempo slider
- The Conductor track
- An external device, such as a mod wheel on a keyboard controller

Only one of these sources can be chosen at a time.

When Tempo Control is set to the Conductor track, you program all the tempo changes into the Conductor track. Collectively, these tempo changes are called the *tempo map*, and they occur automatically when you play the Chunk under Conductor track tempo control.

Tempo maps can be programmed using the Change Tempo command as described in this chapter. Alternately, you can create a tempo map in real time by slaving Performer to Tap tempo synchronization. See the chapter called *Receive Sync* to learn more about creating tempo maps in real time using Tap tempo sync.

Quick Reference



Beat Value: Displays the note value on which the tempo is based. Click on the desired note to choose it. Click on the dot to make the beat value a dotted duration (i.e. one and one half of the chosen note's duration).

Start and End locations: Displays the region over which the tempo change will take effect. Click on the box and type in the desired values. Use the Tab key to move from field to field.

Anchored Tempo Indicators: Click on the anchor icon to toggle a starting or ending tempo between anchored and unanchored. Anchored tempos are automatically set to the current tempo in the region, preventing unwanted jumps in tempo.

Time Display Buttons: Click on the appropriate radio button to select real or frame time for the tempo parameters.

Tempo Density Buttons: Click on the appropriate radio button to choose between Coarse and Fine tempo event densities. The Fine setting generates 12 tempo events a beat; the Coarse setting generates far fewer events.

Tempo Curves: Click on the desired curve button to select the type of tempo change desired. Each curve has a set of parameters and options which control the shape and range of the tempo change.

Tempo Parameters: The number and type of parameters depends on the Tempo Curve selected. Parameters outlined by a box can be set by the user; other parameters are computed and verified by Performer when the Compute or OK buttons are pressed. Values that are incalculable or out of range will highlight and cause the Macintosh to beep (or the menu bar to flash). Press the Option button to change the parameters that can be edited.

Randomize tempos: Check this box to randomize tempos within a specified range, expressed as a percent or as a number of beats per minute (bpm).

Emphasis: Type a value between -9 and +9 to weight the randomization either lower or higher.

The Options Button: Click on this button to select which parameters are user-definable.

The Compute Button: Click on this button to compute the values for parameters that are not user-definable.

The OK Button: Click on this button to enter the tempo change and close the dialog box.

The Cancel Button: Click on this button to cancel the tempo change and close the dialog box.

Basics

The Change Tempo command is used to create tempo changes. You can specify a static tempo change (i.e. a constant tempo) or a dynamic one (a smooth change) via a curve. A constant tempo contains no variation of the tempo for its duration; it is merely a change from one tempo to another. A smooth change contains varying tempo values. The way that these values change is specified by one of four curves. An *accelerando*, for example, is a smooth

change with a linear curve in which the tempo gradually increases. When a smooth change is specified with a curve, Performer approximates the smooth change with a large number of discrete tempo changes in quick succession.

When you use Change Tempo, any existing tempo data in the specified region is erased and replaced by the new data generated by the command.

A *tempo map* is simply the complete set of programmed tempo changes for an entire sequence or song. These changes are displayed in the Conductor track.

- ☛ The tempo changes for a given Chunk can only be edited in its Conductor track.

To get a clear picture of the tempo map of a Chunk, you can use the View Filter to view only tempo changes in its Conductor track.

The tempo map specifies the relationship between real or frame time and measure time. Each tempo map consists of tempo changes occurring at measure time locations. Performer always maintains a correlation between real and measure times according to the tempo map. When you move to a measure time location, the corresponding real time is computed and vice versa. The same measure will always occur at the same real time location no matter where you start playing.

When you change the tempo map, the real times of all markers and events (viewed in Event Editing windows) are updated. The real time locations of locked markers do *not* change in this case. Rather, their measure times change.

Performer's tempo capabilities were designed to be very effective in film and video applications. Tempo calculations are very accurate resulting in very precise location abilities. Finding a frame time location will bring you to the exact measure time location consistently. Real time locations of events and markers are completely reliable and give an accurate representation of the timing of the music.



The Change Tempo Command

This precision is possible because Performer maintains a very high degree of internal tempo resolution, much greater than the two decimal places that you can enter. This resolution allows you to set the tempo for a region by specifying its length in real or frame time: Performer will calculate the correct tempo to make the end of the region occur at the time you specify.

When you set the tempo control in the metronome to the Metronome slider, the programmed tempo map is temporarily disabled by the current metronome slider tempo setting. When you switch back tempo control to the Conductor track, the programmed tempo map is re-enabled.

The Change Tempo command lets you create smooth tempo changes in a defined region of time. The start and end of the region are defined by measure locations. With this command, you can calculate a tempo for a region by giving a real time length for it.

To use the Change Tempo command:

- 1. Choose the sequence or song in which you wish to insert a tempo change.**

If a Tracks window is active, the tempo change will apply to that sequence. If the Chunks window is active, the tempo change will apply to the highlighted Chunk or, if no Chunk is highlighted, to the current play-enabled Chunk. If an Event Editing window is active, the tempo change will apply to whatever sequence it belongs to.

- 2. Choose Change Tempo from the Change menu.**

The Change Tempo dialog box appears. The name of the selected Chunk is displayed after the words "Change tempo of sequence (or song)" at the top of the dialog box.

- 3. Choose the beat value of the tempo.**

Click on the value to select it; click on the dot if you want a dotted value. For example, a tempo of dotted eighth = 90 would require you to click on the eighth note and the dot.

- 4. Choose between displaying times in real or frame time.**

5. Choose between coarse or fine tempo changes.

Click on the appropriate radio button.

6. Choose the curve you want for the tempo change.

The curve type you select is highlighted.

7. Enter the Start and End locations.

Type in the measure | beat | tick values for the start and end of the region for the tempo change.

8. Press the Options button repeatedly until the desired combination of Start/End tempo/times have boxes around them.

There are several combinations of tempos and times that can be entered and computed. For each combination, the values you can set are enclosed by boxes.

9. Enter all parameters enclosed in boxes.

Type in the desired values. To set a Start or Ending tempo to the current tempo, click on the anchor icon for the parameter.

10. Press the Compute button to calculate the tempo and time values based upon the parameters you entered.

If the computed values are not satisfactory, enter new parameters and try again.

11. Press OK to enter the tempo changes or Cancel to terminate the action without entering the changes.

Tempo calculations may take some time after you press the Compute or OK button. To stop calculations in progress, press the Command and period keys at the same time.

Selecting a Tempo Beat Value

Tempos are measured in beats per minute. You can select any beat value for the tempo from a sixteenth note to a whole note. The beat value can be dotted. The number of beats per minute can be between 20 and 400. At very slow tempos, you may want to use smaller beat values such as an eighth note. At fast tempos, you may want to use

larger values such as a half note. Your choice of beat value does not affect the frequency of the Click. This is set separately with the Change Meter command.

When you type in a number of beats per minute in Performer (in the Metronome, in a pop-edited tempo event, or in the Change Tempo window), you can type in a timing resolution of up to a hundredth of a beat per minute (136.45, for example). In addition to providing you with a high degree of resolution, this also allows you to easily enter tempos that match standard frame click metronome values.

Selecting a Time Display

You can choose whether to display start and end times in real or frame time. This is very useful for calculating timings in film and video work.

Setting the Start and End Points

The measure time locations entered in the Start and End boxes in the Change Tempo dialog box delineate the region in which the tempo change occurs. New tempo data will be inserted into this region according to your specifications.

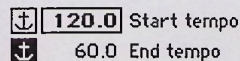
Using the Fine and Coarse Options

The Fine and Coarse options determine the density of tempo change data generated. Selecting the Fine option causes tempo changes to be generated 12 times per beat. This creates the smoothest changes but generates lots of data, taking up memory and possibly slowing down the display of real and frame times in the Markers or Event Editing windows. This option is best used over regions of only a few measures. With the Coarse option, fewer tempo changes per beat are generated. This is the best option to use in a large region.

In most situations, the tempo changes generated by the Coarse option will sound completely smooth. The rule of thumb here is to use the Coarse option unless the tempo changes are not smooth enough: in this case, the Fine option can be used.

Anchoring the Start and End Tempos

The Start and End tempo parameters have an anchor icon next to them. When the anchor icon is highlighted, the tempo is anchored. If the anchor icon is unhighlighted, the tempo is not anchored.



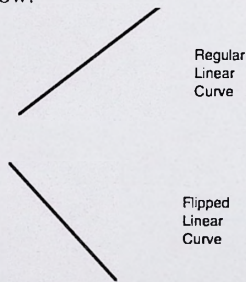
To anchor or unanchor a tempo, click on the anchor icon next to it.

When a tempo is anchored, the current tempo at that location in the Chunk is used. For example, if you anchor the Start tempo parameter, the value used for that parameter will be the pre-existing tempo at the Start location.

The anchoring option is used to make sure that tempos just before and just after the region are matched exactly. This insures that there are no sudden jumps in tempo at the start or end of the region. It is best to anchor tempos when you want this continuous tempo effect; you cannot achieve the same degree of accuracy when entering tempos manually.

Using Tempo Curves

The tempo curve buttons specify the values for the individual tempo change events created by the Change Tempo dialog box. Rather than inserting each tempo change manually, you can select a curve and set a few parameters; Performer will calculate the tempo changes necessary to create the desired effect. The flat, straight line (the constant curve) generates just one tempo change at the beginning of the region. The other curves -- linear, logarithmic, exponential and polynomial -- generate a number of tempo changes which approximate the shape of chosen curve. These curve types are described in detail below.



To select a curve, click on the button containing the picture of the curve. The currently selected curve is highlighted. When a curve is selected, the associated parameter fields are displayed in the lower section of the dialog box.

The curves are all displayed as increasing values. However, if you specify an End tempo that is less than the Start tempo, the tempo changes generated will decrease over time according to the chosen curve. In effect, this flips the curve upside down. For example, if you

Curve Parameters

wanted to program a ritard (slowing down), you'd choose the linear curve and enter a lower ending value. This would "flip" the effect of the curve from up to down, as shown to the left.

Each curve has unique parameters. These parameters are the specifications for the tempo change data to be generated: starting time, ending time, etc. In addition, these parameters can be combined in several different ways for each curve. For example, the linear curve allows you to set different combinations of the Start tempo, End tempo and End time. After selecting a curve, pressing the Options button cycles through the various combinations of parameters possible for that curve. Parameters that you can enter are in boldface type and are enclosed in a box; parameters that Performer will compute (and that you cannot enter) are in plain type without the box.

After you enter the parameters for a curve, you must press the Compute button for the other parameters to be calculated. These calculations are not automatic: you must explicitly request them by pressing the Compute button. These calculations can take time; if you are certain about the values you have entered it is not necessary to use the Compute button. To abort a calculation in progress, press the Command and period keys at the same time.

Each curve displays its Start time parameter. *This value is not user-changeable*; it is always computed from the starting measure time location. It is provided as a reference for viewing the length of the region.

The following paragraphs describe the effects of each curve on the specified region and the parameter options for each.

The Constant Curve



The constant curve sets the region to a constant tempo by inserting only one tempo change at the beginning of the region.

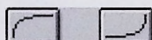
Parameters:

Tempo: This is the tempo for the entire region in beats per minute. You can use one decimal place value if you wish, e.g. 89.7. If you anchor the tempo, it will be the same as the pre-existing tempo at the Start location of the region.

The Linear Curve



The Logarithmic and Exponential Curves



End Time: This is the time at which the end measure location will occur.

The linear curve creates a smooth tempo change with no fluctuations in the specified region.

Parameters:

Start Tempo: This is the tempo at the Start location of the curve in beats per minute. If you anchor this value, it will be the same as the pre-existing tempo at the Start location.

End Tempo: This is the tempo at the End location of the curve in beats per minute. If you anchor this value, it will be the same as the pre-existing tempo at the End location.

End time: This is the time at which the End location occurs.

These two curves are similar: they both create a smooth change in the specified region. The logarithmic curve changes tempo more rapidly at the beginning of the region; the exponential curve changes tempo more rapidly at the end.

	<input type="text" value="120.00"/>	Start tempo	<input type="text" value="0:00:00:00"/>	Start time
	<input type="text" value="180.00"/>	End tempo	<input type="text" value="-----"/>	End time
	<input type="text" value="10"/>	Curvature (1 to 99)		

Parameters:

Start Tempo: This is the tempo at the Start location of the curve in beats per minute. If you anchor this value, it will be the same as the pre-existing tempo at the Start location.

End Tempo: This is the tempo at the End location of the curve in beats per minute. If you anchor this value, it will be the same as the pre-existing tempo at the End location.

End time: This is the time at which the End location occurs.

The Polynomial Curve



Curvature: This is a value that controls the degree of curve in the smooth change (i.e. its non-linearity). Enter a value between 1 and 99. Low curvature values flatten the curve and produce a more even rate of change. For example, a value of 1 results in a near-linear change that is similar to the linear curve. High curvature values round out the curve and result in more change at the beginning or end of the region depending on the button selected. For example, a value of 99 will cause much of the tempo change to occur at either the beginning (for the logarithmic curve) or the end (for the exponential curve). The higher the curvature value, the more pronounced the curve shape.

The polynomial curve creates a change in the specified region which starts smoothly at the beginning of the region, changes most rapidly in the middle and ends smoothly. Note that the unique parameter *Mid Beat* is included with this curve, allowing you to control aspects of the middle of the curve.

Parameters:

Start Tempo: This is the tempo at the Start location of the curve in beats per minute. If you anchor this value, it will be the same as the pre-existing tempo at the Start location.

End Tempo: This is the tempo at the End location of the curve in beats per minute. If you anchor this value, it will be the same as the pre-existing tempo at the End location.

Curvature: Allows values between 1 and 99. Low curvature values flatten the curve; high values round it. Values of 30 to 60 work particularly well with this curve.

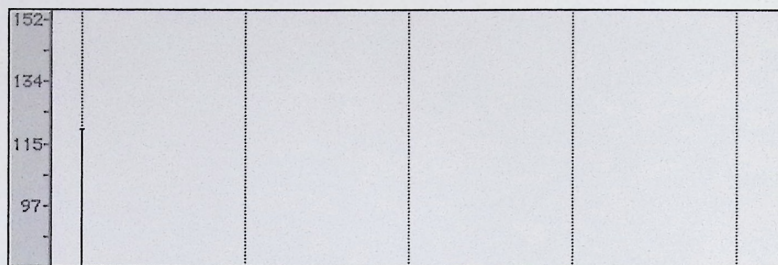
Mid Beat: This is the measure time location at which the Mid Tempo value occurs. This is the point at which the most rapid tempo change occurs. This location can be any time between the Start and End times and allows you to control where most of the changing will occur.

End time: This is the time at which the End location occurs.

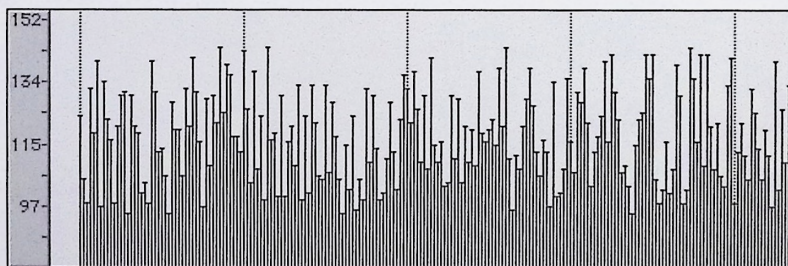
The Randomize Option

The Randomize option causes the tempo or tempos being generated by one of the selected curves to be randomized within a range for the entire region over which the tempo change is being made. For

example, if you are inserting a constant tempo of 120 bpm *without randomization*, the result is a single tempo event at the beginning of the region as shown below:

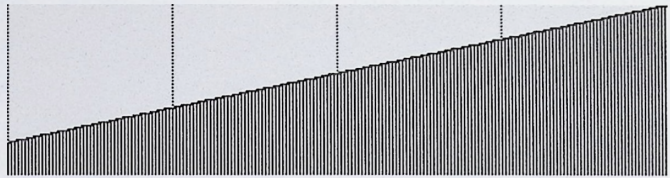


However, with the Randomize option checked and the range set to ± 25 bpm, the result is a tempo map that constantly and randomly changes between 95 and 145 bpm:

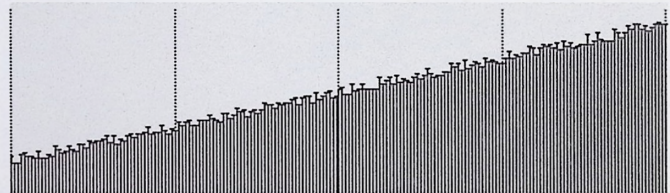


Randomization can be used in conjunction with any curve

Randomization option is a check box option, which means that it can be used in conjunction with any of the tempo curves:



A linear tempo curve with no randomization.



The same curve with randomization set to ± 10 bpm.

Controlling the degree of randomization

The Randomize option is ideal for adding "human feel" to the tempos of a sequence. By controlling the range over which the randomizing occurs, you control the degree of that feel. You can specify the range either as a percentage or as a range of bpm. In either case, each tempo event generated is placed randomly within the range.

Emphasis

This sub-option causes the tendency of the randomization to be higher or lower within the specified range. Thus, if you wish to randomize the tempos within a certain range, but you wish them to tend to be higher, use a positive emphasis; use a negative emphasis if you wish them to tend to be towards the lower end of the range. A value of zero equals no emphasis, which causes the randomization to occur evenly within the range.

The effect of Density on randomization

A *Fine* density setting causes tempo events to be generated more frequently than a *Course* density setting. Notice that these two settings have an effect on the constant tempo curve, which normally only produce a single tempo event.

The Options Button

Pressing the Options button cycles through the different combinations of entered/computed parameters for the selected curve. This allows you to specify the curve in a variety of manners. For example, if you select a constant curve, you can specify just the tempo or you can specify the End time, in which case the tempo will be calculated to make the end measure location occur at the end time.

If you are not working with externally imposed timings such as are used in film and video work, you will probably not need to use the Options button.

The Compute Button

The Compute button calculates and displays computed parameters (those which you cannot enter yourself) based upon the parameters you enter. Traditionally, these calculations are done by the composer or arranger either with arithmetic or by using a reference book. Performer gives you a quick means to make these calculations with the Compute button. Since computed parameters are not updated automatically, you must use the Compute button to see their current values. The Compute button doesn't make any internal alterations to the tempo data; it is just a utility to let you see all the parameters.

The OK and Cancel Buttons

Pressing the OK button computes the tempo changes and enters them in the Conductor track. The computation may take a while. If you want to terminate the computation, press the Command and period keys together. Pressing the OK button automatically makes all the calculations for all the parameters.

Pressing the Cancel button terminates the Change Tempo command without entering any of the changes you made.

Viewing and Editing Tempo Changes

Tempo change data is stored in the Conductor track for the Chunk. Tempo changes look like continuous MIDI data (such as pitch bend or controller information) in the Conductor track Event Editing

windows. Each tempo change has a time and a tempo value. The tempo has two parts, the tempo value in beats per minute and the beat value (e.g. 1/4 note, 1/8 note, etc.)

Editing tempo changes can be done in either the Tracks window or the Event Editing windows for the Conductor track. You can apply all the commands on the Edit menu to tempo changes. Make sure that tempo changes are selected in the Edit Filter, available from the Edit menu.

Note that smooth tempo changes require a large number of discrete tempo changes very close together. Also note that Performer's internal resolution of tempo events is much higher than that displayed in the Event Editing windows. So, tempo events that seem identical actually represent different tempos with higher resolutions than can be shown.

To edit tempo changes using the Tracks window, set the Edit Bar times and select the Conductor track. To edit tempo changes in one of the Event Editing windows for the Conductor track, just highlight one or more tempo change events as you normally would in any other track's editing window. Make sure that tempo changes are selected in the View Filter. You can also insert single tempo changes by using the Insert button in the title bar. See the chapter *The Conductor Track* for more information.

Tempo Editing Resolution

Tempos can be manually edited to a resolution of a hundredth of a beat per minute. When you use the Compute button in the Change Tempo dialog box, tempos are calculated to a much higher degree of accuracy.



Chapter 35 *The Conductor Track*

The Conductor track is a special track containing markers, meter, tempo and key change information. Every sequence and song has a Conductor track; it cannot be deleted. You may use the commands from the Edit menu in the Conductor track to Cut, Paste, Repeat, Shift, and otherwise edit tempo, meter, and key maps, as well as markers. In addition, the Conductor track can be used to directly insert simple tempo, meter, and key changes, as well as to 'record' a tempo map entered in real time using Tap tempo synchronization.

The Conductor Track has two available Event Editing windows: the Event List window and the Graphic Editing window. The examples in this chapter refer to the Conductor track's Event List window; see the chapter *The Graphic Editing Window* to learn about editing the Conductor track graphically.

Basics

The Conductor track automatically appears in the Tracks window for each sequence. The Conductor track cannot be deleted or renamed; it can be moved and given comments like a standard track. The Conductor track has a record-enable button for use with Tap tempo synchronization, described in the *Receive Sync* chapter. The Conductor track cannot be looped.

A song's Conductor track can be opened by choosing *Edit Conductor Track* from the Song window mini-menu.

The Conductor track contains four types of events: Tempo changes, Meter changes, Key changes, and Markers. These events are not MIDI data; instead, they control or conduct your music's performance during playback. The tempo, meter, and key events can be edited like standard MIDI events, either with the commands on the edit menu or directly in the Conductor track Event List or Graphic Editing window. Unlocked markers may be edited in the Conductor Track; locked markers may only be edited in the Markers window.

Key Changes

1|1|000 C Major

The following sections describe each type of event in some detail; for more information on the Change Key, Change Meter, and Change Tempo commands, or the Markers window, see the appropriate chapters.

Key change events display the name of the key. User-defined key signatures are displayed as 'Custom'. See the *Change Key* chapter for a full description of key signatures in Performer.

Also note that this section discusses the editing of key changes in the Conductor track Event List window. See the chapter *The Graphic Editing Window* for information on editing the Conductor track graphically.

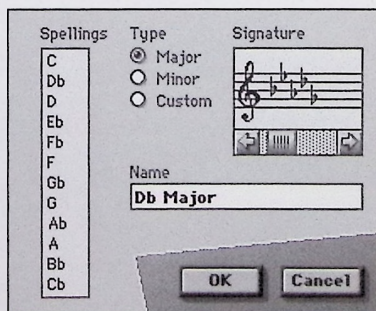
To insert a Key change event in the Conductor track Event List window:

1. Press the Insert button in the Event List window title bar.
2. Select Key Change from the menu.

A new Key change event appears, with the location field highlighted for editing.

3. Type in the measure, beat, and tick location and key for the event.

Use the Tab key to move from field to field. When you highlight the key field, the Change Key dialog box will appear. See the *Change Key* chapter for information on this dialog box. Click OK to confirm the key; the key you specify will be in effect until the next key change.



4. Press the Return key to confirm your choice.

You can cancel the insertion by clicking anywhere else on the screen.

To edit a Key change event in the Conductor track Event List window:

1. Option-click or double-click on the Key change event.

A pop-edit box will appear.


2. Change the location or key information.

Use the Tab key to move from field to field. When you highlight the key field, the Change Key dialog box will appear. See the *Change Key* chapter for information on this dialog box. Click the OK button to confirm the key change; the key you specify will be in effect until the next key change.

3. Press the Return key to confirm your edit.

You can cancel the edit by clicking anywhere else on the screen.

Meter Changes

4/4 click 

Meter change events display the time signature (the number of beats per bar, over the duration value which gets the beat) and the click value, (the duration value between metronome clicks). See the *Change Meter* chapter for more information about these values. Moving meter change events, or inserting them using the Insert button, can cause unexpected results: please read the section later in this chapter on *Meter Changes and Partial Measures* before attempting to move or insert a meter change.

This section discusses the editing of meter changes in the Conductor track Event List window. See the chapter *The Graphic Editing Window* for information on editing the Conductor track graphically.

To insert a Meter change event in the Conductor track Event List window:

1. Press the Insert button in the Event List window title bar.

2. Select Meter Change from the menu.

A new Meter change event will appear, with the location field highlighted for editing.

3. **Type in the measure, beat, and tick location, meter, and metronome click value for the event.**

Use the Tab key to move from field to field, and type in the correct values. Use the mouse to select your choice of click value.

4. **Press the Return key to confirm your choice.**

You can cancel the edit by clicking anywhere else on the screen. Note that if you typed in a tick location other than 000, the meter change will show 000 after you press return. This is because a meter change always starts a new measure. See the section on Meter changes and partial measures later in this chapter.

To edit a Meter change event in the Conductor track Event List window:

1. **Option-click or double-click on the Meter change event.**

The event will be highlighted.


2. **Change the location or meter information.**

Use the Tab key to move from field to field, and type in the correct values. Use the mouse to choose the click value from the pop up box.

3. **Press the Return key to confirm your edit.**

You can cancel the insertion by clicking anywhere else on the screen. Note that if you typed in a tick location other than 000, the meter change will show 000 after you press return. This is because a meter change always starts a new measure. See the section on Meter changes and partial measures later in this chapter.

Tempo Changes

 = 127.5

Tempo change events display the duration value for the tempo marking, i.e. the note value of the basic beat, and the tempo value itself, as a certain number of beats per minute. Tempo changes can appear singly, indicating an abrupt change in tempo, or as a series of events, approximating a smooth increase or decrease in tempo. In this regard they resemble continuous controller or pitchbend information. For more information on tempo events, see the *Change Tempo* chapter.

There are two ways to insert Tempo change events in the Conductor Track: by directly inserting them, and by recording them while slaved to Tap tempo synchronization. The following procedures cover direct insertion and editing in the Conductor Track.

For information on recording a tempo map in real time, refer to the Tap tempo section in the chapter *Receive Sync*. Recording in Tap tempo creates normal tempo events which can be edited as described below.

Also see the chapter *The Graphic Editing Window* for information on editing tempo changes graphically.

To insert a Tempo change event in the Conductor track Event List window:

- 1. Press the Insert button in the Event List window title bar.**
- 2. Select Tempo Change from the menu.**

A new Tempo change event will appear, with the location field highlighted for editing.

- 3. Type in the measure, beat, and tick location and tempo for the event.**

Use the Tab key to move from field to field, and type in the correct values. Use the mouse to select your choice of beat value.

- 4. Press the Return key to confirm your choice.**

You can cancel the insertion by clicking anywhere else on the screen.

To edit a Tempo change event in the Conductor track Event List window:

- 1. Option-click or double-click on the Tempo change event.**

The event will be highlighted.

Markers



Editing in the Conductor Track

2. Change the location or tempo information.

Use the Tab key to move from field to field, and type in the correct values. Use the mouse to choose the beat value from the pop up box.

3. Press the Return key to confirm your edit.

You can cancel the edit by clicking anywhere else on the screen.

Markers are visible in all Event Editing windows, but they may only be edited in the Conductor track editing windows. Markers cannot be created directly in the Conductor track editing windows; use the Markers window to insert or record new markers. In addition, locked markers cannot be edited in the Conductor track. Unlocked markers can be edited in the Conductor track with the Edit Menu commands. For more information on pop-editing markers see *The Markers Window* chapter.

The Edit commands Cut, Copy, Paste, Erase, Repeat, Merge, Snip, Splice, and Shift all function on the events in the Conductor track. You can use them to move tempo and meter changes together with other tracks in a sequence, shift tempo maps for precise alignment with synchronized video or audio, or to repeat tempo, meter, and key changes in looped sections.

To use the Edit commands on the Conductor track of a sequence:

1. Highlight the Conductor track name in the Tracks window and set the Start and End times in the Edit bar for the correct region,

OR

2. Open an Event Editing window (Event List or Graphic Editing) for the Conductor track and highlight the correct events.

3. Select the desired command from the Edit menu.

To use the Edit commands on the Conductor track of a song:

1. Open the Song window.

Do so by double-clicking the Song name in the Chunks window.

Using the Edit and View Filters with the Conductor Track

2. Choose *Edit Conductor track* from the Song window mini-menu.

The Event Editing window for the song's Conductor track will appear.

3. Highlight the events you wish to edit.

4. Select the desired command from the Edit window.

The Edit menu commands affect events in the Conductor track in the same way as normal MIDI data. See the chapter *Edit Commands* for more on how to select regions and use these commands.

When a region is cut or copied from the Conductor track, meter and tempo events representing the current meter and tempo values are automatically inserted at the beginning of the region in the clipboard. This guarantees that the region will keep its original meter and tempo when pasted elsewhere in the sequence or song. These automatically created meter and tempo change events may be edited normally after the region is pasted back into the Conductor track.

Note that editing meter changes can cause unexpected results. Read the section on *Meter Changes and Partial Measures* below before editing Meter change events.

To effectively edit events in the Conductor track it is important to understand how the Edit and View Filters affect the commands on the Edit menu. Please review the section *Setting the Edit Filter* in the chapter *Edit Commands* and the section *The View Filter* in the chapter *The Event List Window* before working extensively with the Conductor track. Both filters affect the Conductor track the same way as they do for regular tracks.

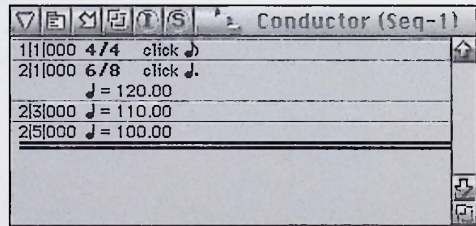
Here are some guidelines to remember when using the Edit and View Filters:

- The Edit Filter selects which types of events are edited from the Tracks window.
- The View Filter selects which types of events are viewed and edited in each Event Editing window.

- The Edit Filter does not affect editing in the event editing windows; all visible, highlighted events in an editing window are affected by the editing commands.

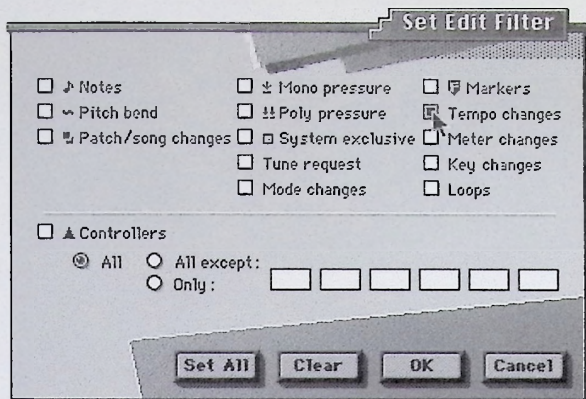
Both filters will affect all Edit commands used in the filters' respective windows. For example, pasting over existing events will erase only those types of events selected in the filters; other events are retained and merged with the pasted data.

The Edit and View Filters are important when editing the Conductor track because it is common to want to edit just one element, e.g. tempo changes, without affecting the other events in the track. For example, the tempo changes in measure two of this sequence can be moved to measure one using the Edit Filter and Tracks window.



1. Select the Edit Filter from the Edit menu, or press command-F.

The Edit Filter dialog box appears.



2. Option-click the check box for Tempo.

This is a easy way of deselecting everything but Tempo change events.

3. Highlight the Conductor track in the Tracks window.

4. Set the Edit bar for the correct region.

In this case, the region starts at 2/1/000 and ends at 3/1/000.

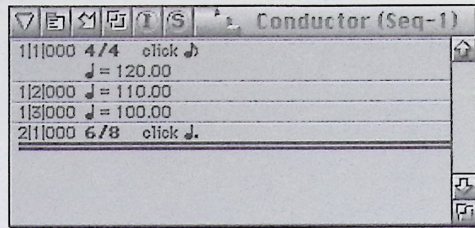
5. Select Cut from the Edit menu.

The Tempo changes are removed; the Meter change is unaffected.

6. Change the Edit bar start time to 1/1/000.

7. Select Paste from the Edit Menu.

The Tempo changes appear in the first measure; the Meter changes are unaffected.



8. Set the Edit Filter back to normal.

Select it from the Edit menu (or press command-F) and use the Set All button to check all the boxes.

If the Edit Filter had not been set during this example, the Meter change in the second measure would have been cut along with the Tempo changes, and the Meter change in the first measure would have been erased during the Paste command.

Meter Changes and Partial Measures

Performer lets you to place a Meter change event anywhere in a sequence or song. This allows a great deal of flexibility in laying out your music, but can produce unexpected results. For example, it is possible to place a Meter change in the middle of a measure, but this measure will be truncated at the location you specify for the new meter. This location becomes the downbeat of the first measure in the new meter.

The following simple rule should help clarify what happens in such situations:

☛ *A Meter change event always starts a new measure.*

For example, if the Insert button in the Event List title bar is used to place a meter at 3|1|240, when you press the Return key to confirm the insertion, the meter change location will change to 3|1|000. This is because a meter must begin a new measure, and all measures begin at zero (000) ticks.



Correcting Unwanted Partial Measures

Looping and the Conductor Track

Here's another example: if the Insert button is used to place a $3/4$ meter at the third beat of a $4/4$ measure, the result is a two beat measure (still marked as $4/4$!) followed by a whole $3/4$ measure. Inserting the Meter change results in a *partial measure*, that is, a measure lacking its full duration.

While such partial measures are not always useful, they can be handy in lining up cues for film and video work, since they let you start a measure precisely at a SMPTE time by creating a meter change at the right spot.

Partial measures may also result from using the Edit commands to Paste, Merge, or Repeat meter changes in the middle of existing measures. Once again, each new meter change event will begin a new measure.

It is important to remember that meter changes only affect the way data is displayed; they never affect the MIDI data itself or the way it sounds when it is played back. If the meter map for a sequence or song becomes complex or confusing during editing, simply erase the meter changes and re-enter them from the start of the region.

Another way to avoid partial measures is to use the Change Meter command found in the Change menu. The Change Meter dialog box will never create partial measures.

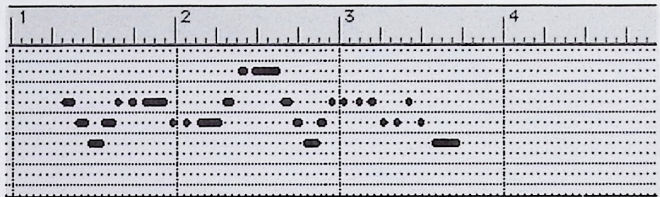
The Conductor track cannot be looped. If you need to repeat tempo or meter changes in a looped region, use the Repeat command from the Edit menu to make consecutive copies of the Conductor track over that region.

When using the Memory-cycle feature to play a section repeatedly, meter and tempo changes in the conductor track will play as usual. When doing so, it is often useful to switch tempo control in the Metronome panel to the Metronome slider. Doing so temporarily disables tempo changes so that they don't complicate recording.

Chapter 36 *The Record Beats Command*

The Record Beats command, found in the Change menu, allows you to record music without listening to a metronome click and then afterwards realign Performer's internal beats and barlines with the music you recorded.

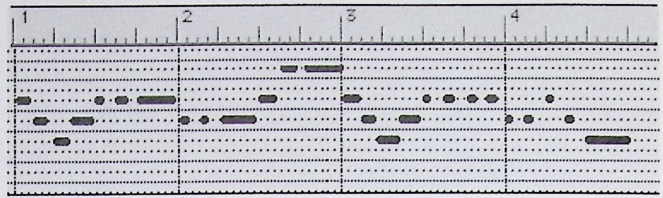
Here's a simple example. The Graphic Editing window below is the tune *Mary Had a Little Lamb* recorded without Performer's metronome click:



Mary Had a Little Lamb recorded in the Graphic Editing window without using the metronome click. Notice that the first note is not on beat 1 and that none of the downbeats in the music match the downbeats in the measure ruler above.

Notice that the music does not line up with the beats and barlines in the measure | beat | tick ruler. This prevents many useful editing tasks, such as quantizing and easy region selection.

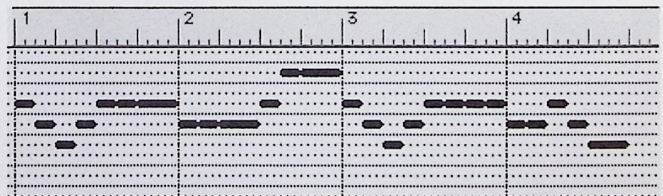
After using the Record Beats command, Performer's beats and barlines have been realigned to match the beats in *Mary Had a Little Lamb*:



Mary Had a Little Lamb after using the Record Beats command. Notice that the beats and barlines in the time ruler now match the downbeats in the music. Also note that the music plays back exactly the same way as the original recording (as long as the Tempo Control in the Metronome is set to the Conductor track).

It is important to note that Performer's beats have been realigned to the music, not the other way around. The music plays back in the same fashion as the original recording. When using Record Beats, you are in no jeopardy of losing the original feel of your performance. Performer accomplishes this by creating a tempo map at the same time as realigning the beats. Thus, Performer's beats speed up and slow down to match the original performance.

Once beats and barlines have been realigned, many useful editing commands can be employed that were not possible beforehand. For example, the above tune can now be successfully quantized for rhythmic accuracy and transcription:



After using Record Beats, music can be quantized, groove quantized, and edited.

Using Record Beats

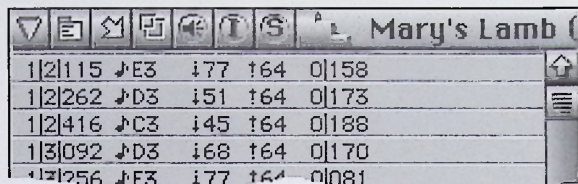
To use Record Beats:

1. Record music into a track.

You can play as freely as you like. Pay no attention to Performer's Counter window. You can even turn off the Metronome click.

2. Open the Event List window and make note of the time of the first event.

In the Mary Had a Little Lamb example above, the first note occurred at 1|2|115:



The screenshot shows a software window titled 'Mary's Lamb'. It contains a table of musical events. The first row is highlighted. To the right of the table is a vertical scrollbar.

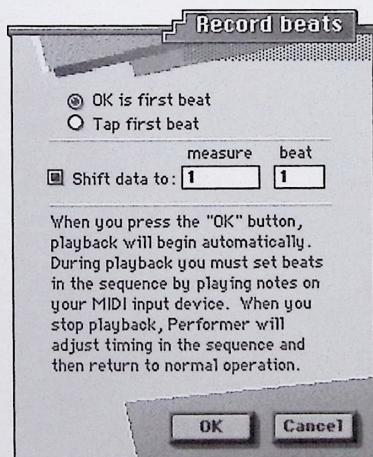
1 2 115	♯E3	177	164	0 158
1 2 262	♯D3	151	164	0 173
1 2 416	♯C3	145	164	0 188
1 3 092	♯D3	168	164	0 170
1 2 256	♯E3	177	164	0 081

3. Set the Main Counter to the same time as the first event.

In this example, we enter 1|2|115 into the main Counter.

4. Choose Record Beats from the Change menu.

The Record Beats dialog box will appear.



5. Use the OK is first beat option.

This option means that Performer will place the first downbeat right at the current counter location, which is 1|2|115, the location of the first note in this example.

6. Check the Shift data to option and type in the measure and beat at which you want to place the first downbeat.

For example, if the first note of music should be at measure 1, beat 4, as a pickup note, type in measure 1, beat 4. Be sure that the location you choose here is NOT before the sequence start.

7. Get ready to tap any note on your MIDI controller.

Get ready to tap along with the music you played.

8. When you are ready, click OK and *begin tapping on the second beat*.

With the *OK is first beat* option, Performer begins playback and taps the first beat for you at the starting location of the Counter. In this example, Performer places the first tap at 1|2|115. You should then begin tapping on the second beat. If you miss the second beat, stop, Undo, and try again.

9. Keep tapping along with the beats in your music as accurately as you can.

10. When you reach the end of the piece, click Stop.

Performer may take moment to realign the beats and enter the newly generated tempo data in the Conductor track.

After Performer calculates the changes, the downbeat of your music will now be at the measure and beat that you indicated with the Shift data to option. In addition, the Counter will beat in 4/4 time on the downbeats that you tapped. To change the meter, refer to the section later in this chapter called *Handling Odd Meters*.

Listening to What You Have Done

Using a Countoff and the Tap First Beat Option

To listen to the result of your tapping:

1. **Choose *Conductor track* from the tempo control pop-up menu in the Metronome panel.**

Performer will now play back according to the new tempo map in the Conductor track.

2. **Press the Play button.**

The music will sound the same, and the metronome and Counter windows will line up with the music as accurately as you tapped while Recording Beats.

The Tap first beat option in the Record Beats dialog box allows you to tap the first beat when you recorded a countoff at the beginning of your original performance, or a visual cue on film or video at which to start tapping.

In this case, you have an aural or visual cue before the first tap that allows you can prepare to hit the first tap accurately.

To use the Tap first beat option:

1. **Set the counter to a position several seconds before the first tap.**

This will give you enough time to prepare for the first tap. You can have as much preroll time as you like to get ready for the first beat.

2. **Choose Record Beats and select the Tap first beat option.**

3. **Click OK to begin Recording Beats.**

Performer will begin playing back. Listen carefully to the countoff or music and get ready for your first tap. Performer will not begin recording beats until your first tap.

4. **Begin tapping on the downbeat where you would like to begin realigning beats.**

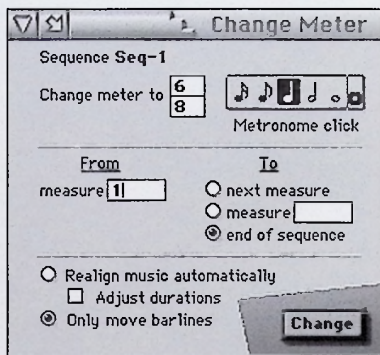
5. **If you are punching out, click Stop immediately after your last tap.**

This prevents music after the punch-out time from being realigned inadvertently. Performer may take a moment to realign the beats.

Handling Odd Meters

The Record Beats command realigns your original Performer into a default meter of 4/4 time. However, if you would like the music to be expressed in an odd meter or in changing meters, you can do so by using the Change Meter command *after* using Record Beats.

For example, let's say that you would like to bar your music in 6/8 time. After using Record Beats, it will be in 4/4 time. To convert it to 6/8, open the Change Meter dialog box, type in 6/8 as the meter, set the beat value to a dotted quarter note, choose the measure range you wish to convert to 6/8, select the Only move barlines option, and click OK. This will re-bar the music in 6/8 time without changing the playback of the music. For more information, please refer to the *Change Meter* chapter.



Handling Pick Up Beats with the Shift Data To Option

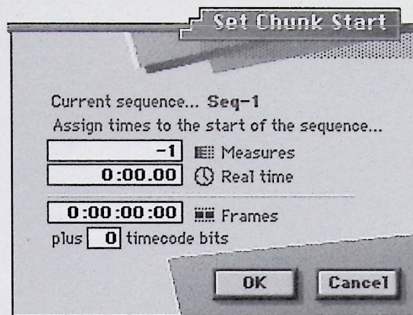
The *Shift data to* option allows you to determine the placement of the first downbeat of the re-recorded beats. *The most important thing to remember is this: do not choose a beat that occurs before the Chunk Start Time.* For example, let's say that your music has two pickup beats and that you would like the following downbeat to occur at 1111000. Before you use Record Beats, create a pickup measure from 0111000 to 1111000 to accommodate the two pickup beats at 0131000 and 0141000.

To create a pickup measure:

1. Click the Start Time button in the main counter to open the Set Chunk Start dialog box.

2. Set the Measure Start Time to 0.

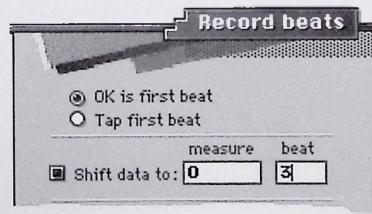
If you need two measures of pickup, set the Measure start time to -1.



3. Click OK.

Now, when you press Rewind back to the beginning of the sequence, the Counter window will read 0111000.

Once you have set up measure 0, you can set the Shift data to option in the Record Beats dialog box to measure 0, beat 3 to accommodate the two pickup beats in your music, and the first downbeat will occur at 1111000.



Recording Beats While Slaved To Tape

Record Beats may also be used while Performer is slaved SMPTE time code via Direct Time Lock or MIDI Time Code. This allows you to freely record music while slaving Performer to film or video without being concerned with Performer's metronome. After recording, you can then line up the beats and barlines afterwards with Record Beats.

Here are a several important preparations you will need to make to Record Beats while slaved to tape:

- *Establish lockup to tape using Direct Time Lock or MIDI Time Code and a SMPTE-to-MIDI converter such as Mark of the Unicorn's MIDI Time Piece™ or Video Time Piece™. For more information, consult the chapters called *Receive Sync*, *Performer and MIDI Time Piece*, and *Performer and Video Time Piece*.*
- *Either before or after you record your music, make sure the first downbeat of the music occurs at the very beginning of the sequence and set the SMPTE Chunk Start Time at so the music starts at the desired SMPTE frame. You can either record the music this way, or shift the music after recording. This makes it easy to play the first beat accurately when you Record Beats.*
- *Set up a countoff before the sequence start using Performer's click so that you can easily record the first downbeat. To do so, enable Performer's click and select Only during Countoff in the Click & Countoff Options dialog box. To set the number of measures for the countoff, double-click the Countoff button in the Consolidated Controls panel.*

Once you have made the above preparations, you are ready to record beats while slaved to tape:

- 1. Set Performer in Slave to external sync mode.**
- 2. Rewind the tape to several seconds before the Chunk start time.**
- 3. Choose Record Beats from the Change menu.**

The Record Beats dialog box will appear.

- 4. Select the Tap first beat option, but don't click OK yet.**

This option means that you will tap the first downbeat (in addition to all subsequent beats).

- 5. While the Record Beats dialog box is still open, get ready to tap any note on your MIDI controller.**

6. When you are ready, roll tape and immediately click OK.

Right after the Record Beats dialog box disappears, Performer's play button should turn black, indicating that it is slaved to tape. The Counter will be counting down negative measures before the sequence start time.

7. Listen for Performer's countoff and *begin tapping on the first downbeat of the sequence.*
8. Keep tapping along with the beats in your music as accurately as you can.
9. When you reach the end of the piece, click Performer's Stop button.

Performer may take moment to realign the beats and enter the newly generated tempo data in the Conductor track.

Before you listen to the results, be sure that Tempo control in the Metronome is set to the Conductor track so that the sequence will play back with the tempo changes generated by the Record Beats command.

Chapter 37 *Receive Sync*

The Receive Sync dialog box, found in the Basics menu, allows you to 'slave' Performer to a wide variety of 'master' timing sources. Performer supports all standard MIDI synchronization formats, including MIDI Time Code and MIDI beat clocks with Song Position Pointer data for synchronization with drum machines, hardware sequencers, and other MIDI devices. With an FSK or SMPTE to MIDI converter such as Mark of the Unicorn's MIDI Time Piece (MTP), Performer can synchronize (or 'sync') to audio tape, video, or film, ensuring that events in your sequence happen at exactly the same spot on tape or film every time. For more information about synchronizing Performer with the MTP, see the chapter called *Performer and the MIDI Time Piece*. Performer also has a unique Tap tempo feature for synchronizing to prerecorded music, conducting a sequence as it plays back, or simply recording a tempo map in real time. For a technical description of Performer's sync formats, see *Appendix A: Synchronization Specifications*.

Basics

Performer supports all standard modes of synchronization: standard MIDI beat clocks, Indirect Time Lock, Direct time lock/MIDI Time Code for SMPTE time code sync, and Tap tempo. These modes are selected in the Receive Sync dialog box. When Standard beat clocks, Indirect time lock, or Tap tempo is selected, other parameters appear in the Receive Sync dialog box and must be set correctly; the Direct time lock/MIDI Time code mode has no other parameters. The mode you use depends on the equipment to which you are synchronizing; the following section describes the common forms of synchronization and the corresponding modes in Performer.

Basic Types of Sync

MIDI Beat Clocks are produced by most MIDI compatible drum machines and sequencers, and by some synthesizers (particularly those with built-in sequencers).

MIDI beat clocks are transmitted 24 times a beat. If the master device changes tempo, the MIDI beat clocks slow down or speed up accordingly; any slave device will follow this tempo change. Most devices that generate MIDI beat clocks also send **Start**, **Stop**, and



Continue messages; slave devices will start playback, pause, rewind, or play from the current location according to the combination of these messages received. In addition, many devices send **Song Position Pointer** data. These messages set the current location for playback, much like setting the Counter in Performer. To sync Performer to devices using these MIDI messages, use the Standard Beat clock mode in the Receive Sync dialog box.

FSK is an audio signal which can be recorded on audio tape. Like MIDI clock signals, it provides metrical timing information based upon a certain frequency of oscillations per beat. FSK does not include any positioning information; when using it, playback must always begin from the beginning of the signal. If you are using Performer with an FSK converter, you must rewind the sequence and the tape each time to sync correctly. Performer does not read FSK directly, a special device is needed to read the code and convert it to MIDI clock signals. To sync Performer to FSK converters, use the standard beat clocks mode in the Receive Sync dialog box.

SMPTE time code is an international standard that was developed for film and video work but has proven to be very useful in normal audio work as well. This is an absolute time code, expressing hours, minutes, seconds and divisions of the second in digital form. It can be recorded on tape or film and read by a special device to convert it to MIDI. Since SMPTE has no intrinsic tempo information, the sequencer or device converting SMPTE to MIDI must generate its own tempi. Performer's flexible tempo map and frame time display make it ideal for work with SMPTE time code. Because of its accuracy and wide-spread acceptance, SMPTE is the most powerful of the time code formats. Depending on your converter, you can use the Standard beat clock, Indirect time lock, or Direct time lock/MIDI Time Code modes. Direct Time Lock/MIDI Time Code is the easiest and most accurate mode. Indirect Time Lock, Direct Time Lock, and MIDI Time Code allow the use of Performer's tempo maps, and are far superior to the Standard beat clocks mode.

Tap Tempo is Performer's real-time tempo control facility. This form of synchronization slaves Performer to a 'tap' entered from your MIDI controller. Performer receives a MIDI event for each tap and computes a tempo based on the current meter, the click value, and each event's distance in time from the previous event. Any tempo information in the sequence is ignored while Performer is slaved to

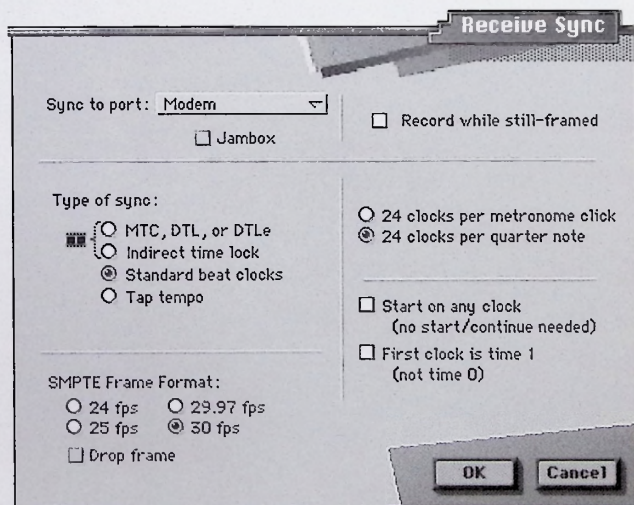
Standard Beat Clocks

Tap tempo. Tap tempo supports both recording and playback, so your tap can conduct or be recorded into any sequence, empty or finished. When you record in Tap tempo, each tap becomes a tempo event in the Conductor Track. Even if you have a minimum MIDI setup, you have everything you need to use Tap tempo synchronization.

The following sections describe Performer's sync modes.

This is the standard form of synchronization between two MIDI devices. When the Standard beat clocks option is selected, Performer can sync to a master device that is generating MIDI clock signals. If you want to slave Performer using a drum machine, external sequencer, FSK converter, or other MIDI device as master, use this mode. This mode may also be used with a SMPTE converter that generates its own tempo map. In Standard beat clocks mode, Performer's tempo will match that of the master device; Performer's tempo features are disabled.

When you select the Standard beat clocks option, the Receive Sync dialog box looks like this:



Implementations of MIDI have evolved over the years. As a result, not all devices transmit and send MIDI clock signals in the same way. Performer provides several options for maximum synchronization compatibility with your master device:

24 clocks per metronome click/24 clocks per quarter note: Some manufacturers have begun to make devices which send 24 clock signals per beat (one click of the device's metronome) instead of the standard 24 clocks per quarter note. This new method is very useful when there are meters which do not use the quarter note as the beat unit: 3/8, 5/16, etc. In 6/8, for example, there might be a metronome click every three eighth notes; in 4/1, the metronome would click once every whole note. If you were using a less common meter such as 5/32 or 3/16 + 4/16, using the quarter note as the timing base would not be very useful. Instead, use the 24 clocks per metronome click option.

Start on any clock: When this option is checked, Performer will automatically start if it receives a time clock even if no start or continue command was received. This option is necessary when using some early MIDI devices which don't send start or continue commands, only timing clocks.

First clock is time 1: When this option is checked, Performer interprets the first MIDI clock signal it receives as the *second* timing clock of the sequence, 1/24th of a beat after the beginning. Devices manufactured recently send the first clock signal (time 0) after the start command for the sequence. Some earlier devices assume the start command to be the first clock signal. The first clock signal they send would be 1/24th of a beat after the beginning. If you are using one of these devices, you should check this option.

Since manufacturers rarely explain this aspect in their documentation, you may not know if your device behaves this way. The best way to find out is to experiment: set the metronome to the slowest possible tempo, play both devices (with Performer as slave) and listen for discrepancies in attacks and beat alignment. The difference of 1/24th of a beat is very audible at a slow tempo. If Performer seems slightly behind the master device, try checking this option.

Default Settings

The default settings reflect the most commonly used MIDI standards. It is best to set them this way before choosing to alter them:

Using Standard Beat Clocks Mode

- 24 clocks per *quarter note*
- start on any clock: *unchecked*
- first clock is time 1: *unchecked*

To put Performer into Standard beat clocks mode:

- 1. Select Receive Sync from the Basics menu.**
- 2. Choose the port receiving the sync information.**
Choose the port from the pop-up menu provided.
- 3. Click on the Standard Beat clocks button.**
- 4. Choose between 24 clocks per metronome click or per quarter note.**
- 5. Select the timing options you want by checking their check boxes.**

Selecting the *Start on any clock* will cause Performer to automatically start upon receipt of any clock signals. Selecting the *First clock is time 1* option will interpret the Start signal as the first timing clock.

- 6. Press OK to confirm your choice or Cancel to cancel it.**

To slave Performer to an external source transmitting MIDI beat clocks:

- 1. select Slave to External Sync from the Basics menu.**

This puts Performer into slave mode, waiting for sync information from an external device.

- 2. Click on the Play or Record button in the main transport controls.**

The Play button will flash on and off, meaning that Performer is waiting for sync information to start.

- 3. To start Performer, start the external device.**

When Performer is locked and playing, the Play button will turn to solid black. Once locked, Performer will follow, start, stop and rewind under control of the master.

Indirect Time Lock



4. To terminate the lock up with the master, click on the Stop button.

Clicking on the Stop button will both stop Performer and remove it from the master's control. This can be done at any time. To return to normal operation, turn off Slave to External Sync by reselecting it from the Basics menu.

Indirect time lock allows Performer to lock to time code (such as SMPTE) using standard MIDI clock signals. This requires a specific method of setting your SMPTE to MIDI converter. Indirect time lock works as follows: First, a steady tempo (60 BPM) and a starting SMPTE frame are set in the SMPTE to MIDI converter. The converter reads the time code and generates MIDI clock signals at the specified tempo. Performer reads these clock signals and computes SMPTE frame locations based upon the constant MIDI beat clocks it receives: the original SMPTE frame times are regenerated by Performer.

To use Indirect time lock, you must set the converter to a constant tempo of 60 beats per minute and pick a starting frame that is before the point at which you want playback to start. The starting frame for the converter should be at least 10 seconds before the start of the sequence and no more than 45 minutes before the end of the sequence, the exact time is not important.

The starting frame time must be entered into Performer. It is important to set exactly the same frame time in Performer and your converter, as all subsequent frame times are computed from this starting time. For best results, use a round number to start from such as 1:28:00:00. This will reduce the chances of rounding errors in the converter. Once locked up, Performer follows the tempo map you've programmed for the sequence. Also upon lockup, if Click is enabled, Performer will click in the meter specified at 1 | 1 | 000 or will default to 4/4.

Due to the limitations of the MIDI song position message, Performer can only locate over a 45 minute range in this mode. If you try to work on a longer piece, Performer will not be able to lock to it after 45 minutes.

To put Performer into Indirect time lock:

1. Set the starting frame number on your converter.

Make sure that this time is at least 10 seconds before the start of the sequence and not more than 45 minutes before the end of the sequence.

2. Choose Receive Sync from the Basics menu.

A dialog box appears.

3. Choose the port receiving the sync information.

4. Click on the button next to "Indirect time lock".

Type of sync:

☐ MTC, DTL, or DTLe

☒ Indirect time lock

☐ Standard beat clocks

☐ Tap tempo

SMPTE to MIDI converter must be set to 60 beats per minute.

Converter start frame:

0:00:00:00

☐ Start on any clock
(no start/continue needed)

☐ First clock is time 1
(not time 0)

5. Set the converter start frame time.

This must match the frame number you set in the converter.

6. Set the timing options if necessary by checking their check boxes.

If your converter outputs non-standard timing information, you may need to check the *Start on any clock* and/or *First clock is time 1* options. See the *Standard beat clocks* section above for an explanation of these.

7. Press OK to confirm your choices or Cancel to cancel them.

8. Set the SMPTE frame format.

All standard SMPTE frame rates are provided, including 29.97 Drop and 29.97 non-drop. The Drop frame check box is available only when the 29.97 frame rate option is selected.

SMPTE Frame Format:

- ☐ 24 fps ☐ 29.97 fps
☐ 25 fps ☒ 30 fps
☐ Drop frame

9. Set the start time for the counter, if necessary.

Click the Start Time button in the counter and enter the start time in the dialog box provided.

The counter start time is different from the starting frame number you entered in the converter and the Receive sync dialog box: it is the time that Performer will display as the starting time when the sequence begins. The time you enter should be later than the one you set on your conversion unit or external device (a few seconds, at least): Performer will take this amount of time to "chase" the correct frame number to lock with it.

10. Select External Sync from the Basics menu.

This puts Performer into slave mode, waiting for sync information from an external device.

11. Click on the Play or Record button in the main transport controls.

The Play button will turn grey, meaning that Performer is waiting for sync information to start.

12. To start Performer, start the external device.

When Performer is locked and playing, the Play button will turn to solid black. Once locked, Performer will follow, start, stop and rewind under control of the master. Also upon lockup, if Click is enabled, Performer will click in the meter specified at 111/1000 or will default to 4/4.

13. To terminate the lock up with the master, click on the Stop button.

Clicking on the Stop button will both stop Performer and remove it from the master's control. This can be done at any time. To return to normal operation, turn off Slave to External Sync by reselecting it from the Basics menu.

Don't confuse the counter's start time with the converter starting time. The converter starting time is an arbitrary number that is necessary for Performer to calculate frame numbers from the MIDI clock signals it receives. The sequence starting time, set with the Start Time button in the Counter, is the time at which the sequence will actually begin playing.

Slaving to SMPTE with MTC, DTL, or DTLe

Use this mode when you are slaving Performer to SMPTE time code via a converter that supports one of these formats. The SMPTE time code is fed from a master source such as a audio tape recorder, video tape recorder, or SMPTE generator into a SMPTE-to-MIDI converter such as a MIDI Time Piece II, which translates the SMPTE into MIDI timing information. This MIDI timing information can be produced in one three popular formats: Direct time lock (DTL), Direct time lock enhanced (DTLe), and MIDI time code (MTC). There are only slight differences between these three MIDI timing formats. For the most part, they produce identical results. The differences are discussed later in this chapter.

MTC/DTL/DTLe sync mode is the simplest and most direct way to slave Performer to an external source generating SMPTE time code. Performer is able to lock to the frame times of the master, insuring precise synchronization between devices. To use this mode, you must have a SMPTE to MIDI converter that supports at least one of these three sync formats, such as a MIDI Time Piece or MIDI Express SMPTE/MIDI interfaces from Mark of the Unicorn.

There are no special options to select in the Receive Sync dialog box: when in MTC/DTL/DTLe mode, Performer simply responds to timing data directly.

Once Performer is locked to the master, there is no need to use Performer's main transport controls unless you wish to record. Performer will start, stop and locate under control of the master. Also upon lockup, if Click is enabled, Performer will click in the meter specified at 1111000 or will default to 4/4.

You can put Performer into play or record either before or after you start rolling tape. In either case, Performer will lock up quickly.

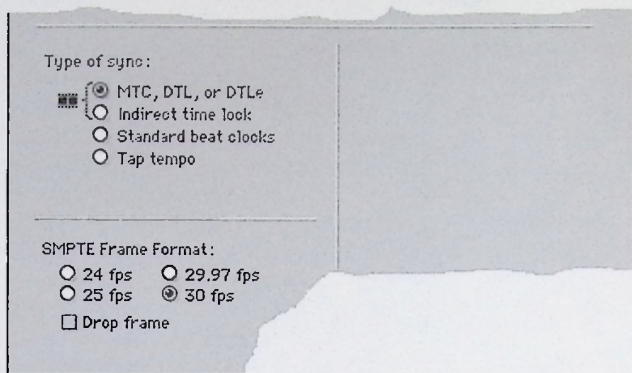
To put Performer into MTC/DTL/DTLe lock up:

- 1. Choose Receive Sync from the Basics menu.**

A dialog box will appear.

- 2. Specify the port to receive sync information.**

- 3. Choose the MTC/DTL/DTLe option as the "Type of sync" by clicking its button.**



4. Set the SMPTE frame format.

All standard SMPTE frame rates are provided, including 29.97 Drop and 29.97 non-drop. The Drop frame check box is available only when the 29.97 frame rate option is selected.

5. Click OK to confirm the Receive Sync settings.

6. Set the sequence starting frame.

Click the Start Time button in the Main Counter.

7. Select Slave to External Sync from the Basics menu.

This puts Performer into slave mode, waiting for sync information from an external device.

8. Click on the Play or Record button in the main transport controls.

The Play button will begin to blink, meaning that Performer is waiting for sync information to start.

9. To start Performer, start the external device.

When Performer is locked and playing, the Play button will turn to solid black. Once locked, Performer will follow, start, stop and rewind under control of the master. Also upon lockup, if Click is enabled, Performer will click in the meter specified at 1 | 1 | 000 or will default to 4/4.

Comparing MTC and DTLe

Comparing DTL and DTLe

Tap Tempo

10. To terminate the lock up with the master, click on the Stop button.

Clicking on the Stop button will both stop Performer and remove it from the master's control. This can be done at any time. To return to normal operation, turn off Slave to External Sync by reselecting it from the Basics menu.

Like Direct Time Lock enhanced, MIDI Time Code is a simple and direct way to slave Performer to an external source reading SMPTE time code. In fact, the only difference between MIDI Time Code and Direct Time Lock enhanced is that *MIDI Time Code uses two bytes for each quarter-frame message, where DTLe uses only one*. Performer supports MIDI Time Code because it was added to the MIDI specification. However, Performer, along with most SMPTE-to-MIDI converters, provides Direct Time Lock as a more efficient alternative.

Which mode should you use? We recommend Direct Time Lock enhanced because of its higher efficiency. If your converter does not support Direct Time Lock enhanced, then you will need to use MIDI Time Code.

The procedure for using MIDI Time Code is exactly the same as the procedure for Direct Time Lock enhanced. See the previous section in this chapter for detailed information.

Direct time lock (DTL), when it was first introduced, had only one frame-advance message per SMPTE frame. A year or so later, Direct time lock enhanced (DTLe) was developed. It consists of four quarter-frame advance messages per frame, as well as a full-frame message once per second; these enhancements produce the highest degree of SMPTE sync accuracy currently available with MIDI.

MTC and DTLe both have a higher timing resolution than DTL. If your converter supports DTL instead of DTLe, you may want to use MTC instead in order to take advantage of its timing higher resolution.

Tap tempo is Performer's real-time tempo control feature. Tap tempo lets you slave Performer to a tap entered from any MIDI controller before, during, or after the recording of your sequence. You can 'conduct' an existing sequence by tapping the tempo, complete with

accelerandos, ritards, and rubato passages; Performer will follow precisely. More importantly, you can record your tap into the Conductor Track for use in subsequent playback and recording.

Tap tempo can be used during virtually any stage in the creation of a sequence. For example, if you have acoustic music on tape, two completed tracks in Performer, and three more Performer tracks to record, you can 'teach' the two existing tracks to follow the prerecorded music. Your remaining tracks will be recorded into a sequence that has all of the temporal nuances of the prerecorded music.

Using Tap Tempo Mode

The following are general points to consider when preparing to use Tap tempo sync.

Establish a meter. When slaving to Tap tempo, Performer must know how many of your taps to group as one measure. Before recording or playing back a passage in Tap tempo mode, make sure you've entered the correct meter(s) using the Change Meter command in the Change menu.

Establish a metronome click value. Your taps correspond to the current metronome click value, specified using the Change Meter command from the Change menu. For example, the tempo of a 4/4 passage can be tapped and expressed in whole notes, one tap per measure, or in sixteenth notes, sixteen taps per measure. Each tap becomes a tempo change event, so the smaller the click value, the higher the resolution of the resulting tempo map. However, tempo events in very small increments will fill up your Conductor Track — and your supply of RAM — fairly quickly. Choose a click value that will give your tempo map high enough resolution but not generate too much data to be recorded at one time.

Choose a tap source. You can use any standard MIDI event as your tap source. Performer will interpret this MIDI event as a tap whenever it occurs on the specified input channel. If you plan to record music while slaved to Tap tempo, choose a combination of MIDI event and channel that won't be needed in the musical passage. For example, let's say you're tapping C3 on a controller keyboard, transmitting on Modem channel 1. The result? *Any other C3's transmitted on the same*

channel will not be recorded. Again, this is only true for C3's transmitted on Modem channel 1. C3's transmitted on other channels will be recorded normally.

Note that although pitch bend and controller events are acceptable as tap sources, the most common controls for sending them (wheels, joysticks) make reproduction of a single, specific value difficult. For example, to define your tap you enter a pitch bend value of 392 using a pitch bend wheel. To slave Performer, you'll need to generate values of 392 or higher — you send a 392 value by going precisely to it, but also by going past it. That much is easy, but remember that Performer will treat only the events with 392 values as taps. All other values sent by your mod wheel will be recorded and interpreted as normal pitch bend events. This makes bend and controller events less practical tap choices than events with precise triggers or more limited values, such as a note or a Controller #64 (sustain pedal) event.

To use Tap tempo:

- 1. Ensure that you've established the correct meter(s) and metronome click value(s) for the sequence.**

Use the Change Meter command in the Change menu. See the chapter *Change Meter* for more information on establishing meters.

- 2. Choose Receive Sync from the Basics menu.**

The Receive Sync dialog box appears.

- 3. Select the port that will receive the tap.**
- 4. Click on the radio button next to "Tap tempo".**

The right side of the box displays the Tap tempo parameters *MIDI beat input data* and *Sync countoff beats*.

Type of sync:

☐ MTC, DTL, or DTLe

☐ Indirect time lock

☐ Standard beat clocks

☒ Tap tempo

MIDI beat input data:

Source: 01W

Event: C3

Sync countoff beats: 4

Sync recorded tempo to:

☒ Internal clock

☐ External time code

☐ Capture start time

5. Choose the MIDI device you will be tapping from in the pop-up menu provided.

6. Specify the MIDI event you wish to use as a tap.

Tab to the Event box or click in it, then enter a MIDI event from any MIDI controller connected to the specified port (play a note, tap a sustain pedal, etc.). The event appears, highlighted; click on the highlighted event if you wish to change it. You can use any standard MIDI event as a tap source.

7. Specify the number of times you wish to tap as a countoff.

The default number of sync countoff beats is four, but the countoff can be any number between 1 and 127. If you enter a number outside this range, the Macintosh will beep (or the menu bar will flash) when you click the OK button and the number will be highlighted. If this happens, click on the highlighted value and enter a new one.

8. Click OK to confirm your choices or Cancel to cancel them.

9. Choose Slave to External Sync from the Basics menu.

This puts Performer in slave mode; it is now waiting for sync information from an external source.

10. If you wish to record the tap into your sequence, record-enable the Conductor Track.

Activate the Tracks window by clicking once on it, then click on the Conductor Track's Record-Enable button. Your tap will be stored as tempo change events in the Conductor Track and used

in subsequent playback and recording. Existing tempo changes will be replaced. Other Conductor track information will be unaffected.

11. If you wish to record music into your sequence, record-enable the desired track(s).

If you wish to record the tapped tempo and music simultaneously, or record music onto more than one track, choose Multi-Record from the Tracks window mini-menu. Specify the record device for each track that is record-enabled. The Conductor Track will record from the device specified in the Receive Sync dialog box.

12. Press the Play or Record button in the main transport controls.

The Play button will flash, meaning that Performer is waiting to receive sync information. Overdub mode will not function on the Conductor Track; that is, recording in either normal or overdub mode will erase any existing tempo events.

13. If you will be tapping along with a prerecorded passage, start playback of the recording.

Ideally, the prerecorded music will have a sufficient countoff so that you can tap the number of countoff beats specified in the Receive Sync dialog box.

14. Begin 'tapping' the MIDI event that you designated in the Receive Sync dialog box.

Performer will listen for the specified number of countoff beats to predetermine the tempo for the beginning of playback or recording. When Performer has received the countoff, playback or recording will begin.

15. Tap the desired tempo and tempo changes.

Make your tap as expressive and dynamic as you wish; Performer will follow. The Counter display will update as you tap.

Tapping to Prerecorded Music on Tape

Hints for Using Tap Tempo

- 16. To end recording or playback, press the Stop button in the main transport controls.**

Don't be alarmed if the Macintosh wristwatch icon remains onscreen for an extended period of time after you stop recording. Performer is calculating precise tempo changes from the taps you just recorded.

- 17. Take Performer out of slave mode by choosing Slave to External Sync from the Basics menu.**

- 18. If you recorded your tap, you can hear the results by rewinding the sequence, making sure the metronome under Conductor track tempo control, and pressing Play.**

Your sequence will play back using the tempo(s) that you tapped. If you are not satisfied with the results, you can use the Undo Record command in the Edit menu and then repeat the above process. You can make adjustments by rerecording certain sections and by editing individual tempo changes in one of the Conductor Track's Event Editing windows.

You can use Tap Tempo to record a tempo map while Performer is slaved to tape—or, more accurately, *referenced* to external time code. You can record a tempo map that matches the music on tape, allowing you to perfectly synchronize your sequence to the prerecorded music. This process is explained in detail in the chapter called *Tap Tempo While Slaved to Tape*.

Recording music simultaneously. If you plan to record music simultaneously with your tap, choose a tap event that doesn't require use of your hands. Controller #64, sustain, is usually triggered by a foot pedal and is a good choice for a tap because it has only two values: On or Off.

Further, Performer will let you use either value for your tap.

Using alternative tap values and sources. You can set the tap as an Off value for a particular note or controller:

- 1. In the Receive Sync dialog box with Tap tempo chosen, Tab to the Event box.**

2. Depress the note or controller, leaving it depressed.

For example, push a modulation wheel away from its 'zero' location. The controller number and its value will appear in the box, highlighted.

3. Without releasing the note or pedal, click on the highlighted Event value.

4. Release the note or pedal.

To continue the example, let the mod wheel spring back to its zero location. The Event box will show Off or 0 as the tap value.

So far, our examples of using Tap tempo have involved tapping a MIDI instrument to 'teach' Performer the temporal details of a sequence. When you tap, you simply send a MIDI event and Performer does the rest. This means you can use any MIDI sequencer to load its own tempo map into Performer — just program the sequencer to play a song's worth of quarter notes while Performer is slaved to Tap tempo sync.

Yet another way of sending Performer a tap is to use a device that converts an audio click into a MIDI event. A click or other regular, amplified signal (a click track on tape, a miced rim shot, etc.) can be fed into such a device and converted into MIDI events from which Performer can generate a tempo map.

Punching In a tempo. Auto-Record can be used with Tap tempo to 'punch in' tempo changes for a section while preserving the tempi outside that section. Enter the punch In and Out times in the Auto-Record bar, found in the Consolidated Controls panel, click on the Auto-Record button, then follow the applicable steps above. (Don't be alarmed if both the Play and Record buttons go grey at first; the Play button is waiting for sync information, and the Record button is waiting for the Counter to reach the punch In location.)

Remember also that slaving Performer to Tap tempo disables the sequence's existing tempo map. So when you start playback in Auto-Record mode, even though Performer will only record taps from the In location to just before the Out location, you will have to tap throughout the pass. Give yourself the most accurate temporal 'context' — the tempi before and after the punch-in passage — as is

Record While Still-framed

Multi-track Audio Recording

Synchronizing with SMPTE



possible, so that the recorded section will fit smoothly into the rest of the sequence. As always, you can fine-tune all tempo change events in the Conductor Track.

The Receive Sync dialog box has an option called *Record while still-framed*. Without this option checked, Performer drops out of record as soon as you stop the tape after a record pass while slaved to tape; Performer will not record again until you press the Record button. This prevents unintentional recording while cueing and accidental loss of Undo Record. When this option is checked, Performer stays in record when you stop the tape so that you can record a hit while parked on a frame. This is particularly useful when frame-advancing using VITC and the Video Time Piece, which provides accurate frame-advancing. Unless you are recording while frame-advancing, we recommend that you leave this option unchecked.

Let's look at an example which illustrates a number of techniques you may find useful in the recording studio.

You are recording a five minute song in the studio. You've preproduced the drum and synthesizer track with Performer. Now you want to record guitar and vocal tracks using live players. You plan to use a synchronization code conversion box (a converter) to translate audio synchronization code recorded on tape into MIDI timing data. Let's start by assuming you are using a SMPTE/MIDI converter, then discuss what you will have to do differently if you are using an FSK conversion box.

The first thing you should do when you get to the studio is to "stripe" (i.e. record) one track of your multi-track tape with an audio sync signal. For this example, let's assume you are using SMPTE time code. Start striping the tape at time 0:59:00:00. *We recommend that you use 30 frames per second, non-drop-frame code*, unless you have a specific reason to use one of the other frame rates. Continue for at least 7 minutes; you should always have at least a minute of time code on the tape prior to the start of your song, and you should record plenty of extra time code at the end in case you decide to lengthen the song at some point. Many people stripe the whole reel straight out of the box with one continuous time code track. Striping may take some time; get it started first thing upon arriving at the studio, so that it will be finished by the time you get everything else set up for recording.

Now, set up Performer to play in sync with the multi-track. Feed the time code from the tape into your SMPTE to MIDI converter. Connect the converter to the Macintosh; some converters connect directly, others have a MIDI Out which must go to the MIDI In of an interface connected to the Macintosh. If you have a MIDI Time Piece (II) or MIDI Express, no additional connections are necessary beyond the normal one to the modem (or printer) port.

If your converter supports Direct time lock, Direct time lock enhanced, or MIDI Time Code, set the appropriate mode on the converter (to lock to SMPTE). Select *Receive Sync...* from the Basics menu. Choose the correct port (*Sync to port:*) and *MTC*, *DTL*, or *DTLe* (*Type of sync:*). OK the dialog box.

Otherwise, you should use Indirect time lock. Set the converter to generate a constant tempo of 60 beats per minute, and have it start at 0:59:00:00. Select *Receive Sync...* from the Basics menu. Choose the correct port (*Sync to port:*) and *Indirect time lock* (*Type of sync:*). For *Converter start frame:* enter 0:59:00:00 (the same time that you set the converter to). You won't need to check either of the other options unless your converter is non-standard. See the *Synchronization* section for more information on these options.

Let's start the song at time 1:00:00:00 on the tape (this is a minute after the start of the time code). Click the Start Time button in the Counter. Enter 1:00:00:00 + 0 time code bits for the frame time. Set the other values as you wish. OK the dialog box.

Set the frame rate correctly in Performer in the Receive Sync dialog box. Choose the correct frame rate; use 30 frames per second unless you have a specific reason to use another format.

Check the *Slave to External Sync* entry in the Basics menu. Press the play button in the motion controls; it will turn grey. At this point, Performer should be slaved to the tape. Display frame time in the counter window, and roll the tape from before the time code. Make sure Performer starts, stops, and follows the tape when you wind through the tape.

For overdubbing, you need to provide your players with a reference mix of the song. You can have Performer sync live to the tape and send the players a cue mix. Or, you might find it easier to just place a scratch mix on one or two of the tracks of the multi-track. That way,

you won't have to worry about Performer while recording. If your session is spread out over several dates, putting a scratch mix on the tape will save you having to set up your computer and synthesizers every time.

When you get to the final mix, you have two choices. You can mix from Performer playing slaved to the tape. This provides the ultimate in sound quality, as the synthesizers are first recorded on the master tape. On the other hand, you may wish to record each synthesizer part on a separate track of the multi-track. This has several benefits. Since the tracks are recorded one at a time, each track can use all of your synths to create a sound. Blending several synthesizers together often creates a more full-bodied sound than you could otherwise achieve. Also, if you have limited outboard effects gear, you can record each track with effects, allowing you to reuse what equipment you have.

When recording a single part to tape, we recommend you *turn off the play-enable buttons* in the tracks window for all tracks except the one you are recording. When you do this, Performer completely ignores the other tracks, letting it concentrate all of the computer's processing power on playing one part. *If you use the Solo button instead*, Performer will scan the other parts while playing. If you have dense, complicated music, or lots of continuous data, this may cause the Macintosh to become bogged down during playback.

When recording each part separately, you can slide individual parts slightly ahead or behind to compensate for delays in your synthesizers, or the specific sounds. For example, string parts often need to be attacked ahead of the beat in order to sound on the beat.

With sampling synthesizers, you may find that some sounds have as much as 100 milliseconds of "dead air" at the beginning of the sample, which results in that much delay between turning the note on and hearing any sound.

To slide a part, just adjust the start time relative to the start time the other parts were recorded with. For example, if you did have a sample with 100 milliseconds of dead air at the start, you could set the start time to 0:59:59:27 + 0 time code bits. That's 3 frames ahead

of the other parts, and at 30 frames per second, 3 frames is 1/10th of a second, or 100 milliseconds. Your sample's audible attack times will now be aligned with those of the other parts.

It's best to slide parts by ear — just keep trying different start times until the part seems most lined up.

Synchronizing with FSK

If you are using an FSK converter in the above example, you can proceed in a very similar fashion.

When striping the tape, you must usually feed the converter with MIDI beat clock information. This information is recorded more or less directly onto the tape. When the tape is played back through the converter, you should receive exactly the same MIDI beat clock information.

When synchronizing to an FSK converter, Performer follows the tempo recorded onto the tape; Performer's internal tempo map is disabled.

The FSK converter usually sends out a carrier tone when it is not receiving MIDI beat clock information. You should record a minute or so of this carrier tone prior to starting Performer.

When synchronizing to tape, you must use the *Standard beat clocks* mode to receive synchronization. Remember that the tempo is already recorded on the tape.

When using FSK, you must always begin playing the tape from the beginning; FSK code does not encode any position information on the tape.

Hints

When locking to external SMPTE synchronization, you can shift parts forward and backward in time to compensate for the numerous time delays in a complex system (each device used in a MIDI path introduces at least 2 milliseconds of delay) or to adjust for envelope delays in certain synthesizer patches (such as strings or any other slow-attack patch).

Setting a Countoff Before Sequence Start While Slaved to Tape

Syncing to SMPTE with the Studio 5™

When recording in external sync, the Record button is turned off every time the master device stops or rewinds. This is a safety precaution, to prevent accidental erasure of previously recorded data. To record in external sync, start the master device, wait for Performer to lock up, and then press the record button.

Many new digital effects devices, like reverbs, delays, equalizers, and even mixers, allow MIDI control. By using Performer with a time code converter to sync to your multi-track tape recorder, you can automate effects changes and other aspects of mixing accurately and flexibly. Read cue points from Performer's counter, or use the Record Hits feature in the Markers window to find locations to insert patch changes and controller information to control your MIDI devices. Alternatively, use the sliders, switches and pedals of your controller keyboard or MIDI mixer to record your mix in real time, then use Performer's editing features to correct any problems.

If you are working in a studio situation where you need a countoff before the beginning of the sequence while slaved to tape, here is how you can set up the Performer's countoff feature:

- 1. Choose a Click Option in the Click & Countoff Options dialog box that will enable the click during Performer's countoff.**

For example, choose the Always Click option or the Only during countoff option.

- 2. Set the number of measures you would like for the Countoff.**

Do so by double-clicking the Countoff button and typing in the number of measures.

- 3. Make sure that the Click is enabled.**

The Click item on the Basics menu must be checked.

If you now rewind well before the sequence start time and roll the tape, Performer, as it counts down, will begin the countoff at the appropriate number of measures before the downbeat of the first measure.

In general, we recommend using Direct Time Lock Enhanced (DTLe) to lock Performer to SMPTE time code. If you are using an Opcode Studio 5, however, use MIDI Time Code (MTC) instead. Just set up

the Studio 5 to generate MTC instead of DTLe. In Performer, no change is needed because Performer uses the same settings for either type of time code. For other hardware interfaces, including the Opcode Studio 4, we recommend using Direct Time Lock Enhanced.

Chapter 38 *Transmit Sync*

The Transmit Sync dialog box, available from the Basics menu, allows you to configure Performer as a master time source. When being used as a master, Performer sends synchronization signals to which other MIDI devices can slave. Performer generates standard MIDI beat clocks; devices which do not recognize MIDI beat clocks require a converter to the appropriate type of synchronization information. For more information on synchronization, see the *Receive Sync* chapter and *Appendix A: Synchronization Specifications*.

You may use Performer as a master of some devices while Performer itself is slaved to another device. This is especially useful when slaving Performer to SMPTE time code; Performer (slaved to the tape) can generate tempos for other sequencers slaved to Performer.

Basics

When Transmit Sync is selected for one or both of the serial ports, Performer becomes a master time source: any compatible MIDI devices connected to Performer will follow Performer's tempo changes, and start or stop along with the program. If the slave devices respond to MIDI Song Position Pointer data, then they will also follow Performer when the Counter location is changed or the Rewind button and Position bar are used.

Performer can transmit sync information in two ways: it can simply pass on (or echo) any sync messages it receives, or it can generate new sync information based upon its own tempo map and controls. These options are described below:

Echo received sync: This option echoes synchronization information which is received. No processing is performed. The reception port must be selected in the Receive Sync dialog box, and Performer must be in External Sync mode for sync to be echoed. Sync is echoed to the ports selected in the Transmit Sync dialog box. There is less delay between reception and re-transmission using this mode than if *Generate MIDI beat clocks* is selected.

Using Transmit Sync

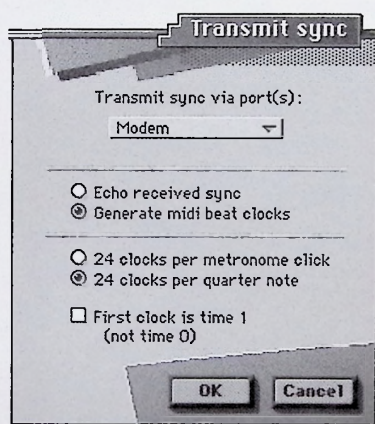
Use this mode if you wish to slave Performer and another device to a master which generates MIDI beat clocks. However, for best results, you should use a MIDI thru box and connect both Performer and the other slave directly to the master. Echoing sync through Performer results in a small delay.

Generate MIDI beat clocks: Performer generates MIDI beat clocks in tandem with the other MIDI information being played back. Use this mode when Performer is the master. You may also find this mode useful when slaving Performer to SMPTE using one of the time lock modes. Performer will generate MIDI beat clocks according to its tempo map in sync with the SMPTE code, so you can slave a sequencer or device that doesn't support SMPTE through Performer.

To set Performer to transmit sync information:

1. Choose **Transmit Sync** from the Basics menu.

A dialog box appears.



2. Select the Macintosh ports that you wish Performer to send sync information over.

If neither port is selected, Performer will not generate or echo sync information. If you are not slaving external devices to Performer, setting the ports option to none improves performance.

3. Choose between echoing and generating sync information.

Click on the corresponding radio button.

4. Set any necessary options.

If you are using *Generate MIDI beat clocks*, set the options *24 clocks per metronome click / 24 clocks per quarter note* and *First clock is time 1* as necessary. These options have no effect when echoing received sync.

Performer is now set to transmit sync information. If your slave devices are set up correctly, they will start, stop, rewind, and play in time with Performer.

Generally, you must put the slave device in an external sync mode before it will respond to Performer's transmissions. Consult the owner's manual for the device to determine the exact procedure. The mode may be called *external clock*, *MIDI sync*, *MIDI clock*, etc.

Some MIDI devices expect 24 clock signals per beat (one click of the device's metronome) instead of the standard 24 clocks per quarter note. This method is very useful when there are meters which do not use the quarter note as the beat unit: 3/8, 5/16, etc. In 6/8, for example, there might be a metronome click every three eighth notes; in 4/1, the metronome would click once every whole note. If you were using a less common meter such as 5/32 or 3/16 + 4/16, using the quarter note as the timing base is not very useful. Instead, use this option to make the metronome click value the timing base.

When this option is checked, Performer interprets the first MIDI clock signal it sends as the *second* timing clock of the sequence, 1/24th of a beat after the beginning. Recently manufactured devices expect to receive the first clock signal (time 0) after the start command for the sequence. Some earlier devices assume the start command to be the first clock signal; the first clock signal would thus be 1/24th of a beat after the beginning. If you are using one of these older devices, you should check this option.

***24 clocks per
metronome click/24
clocks per quarter note***

First clock is time 1

Chapter 39 *Using MIDI Machine Control*

MIDI Machine Control (MMC) is a recent and significant addition to the original MIDI specification. MMC consists of an extensive set of system exclusive commands that allow multiple recording devices to be remotely controlled from a single source. MMC expands Performer's ability to serve as "a recording studio at your fingertips" by allowing you to control the transport and recording functions of your recording hardware entirely from within Performer.

This chapter explains how to use Performer with hardware devices that support the MIDI Machine Control (MMC) specification, such as:

- The Alesis ADAT™ digital multitrack recorder (with the BRC or other MMC interface)
- The Akai DR4d™ digital hard disk recording system (with the additional card necessary for MMC)

Performer serves as a computer-based front end for MMC devices, causing them to play, stop, rewind, and otherwise follow Performer's transport control functions. In addition, you can record-enable tracks on a MMC device remotely from within Performer (for MMC devices that support this capability).

☛ As you begin working with Performer and your MMC gear, keep the following in mind. Performer provides features that are supported by most MMC devices. However, not all MMC devices support every feature explained here. In addition, there can be slight variations in the way each device handles MMC that cause it to behave differently than described. Try to familiarize yourself as much as possible with the features your device supports via MMC. Also, check for "Read Me" files in your Performer folder and update note booklets that accompany your Performer manual; they may include further information about specific devices.

Setting up MMC hardware

MIDI Machine Control requires two-way MIDI communication between Performer and the MMC device. Performer sends control commands (in the form of system exclusive messages) to the MMC hardware, and the MMC hardware sends SMPTE time code back to Performer.

Some MMC devices can generate SMPTE time code in the form of MIDI Time Code (MTC). (Some MMC devices support other forms of MIDI timing information as well, including standard MIDI beat clocks, Direct Time Lock, and Direct Time Lock Enhanced.) Other devices generate SMPTE time code in the form of longitudinal time code (LTC), an audio signal that must be converted to MIDI Time Code by way of a SMPTE-to-MIDI converter such as the MIDI Time Piece II. These two hardware setups are shown below.

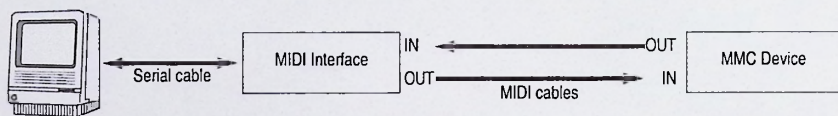


Figure 39-1: If the MMC device can generate MIDI Time Code (MTC), the MIDI connections shown here are all that are necessary. Be sure the MIDI interface internally routes the MTC to the Macintosh.

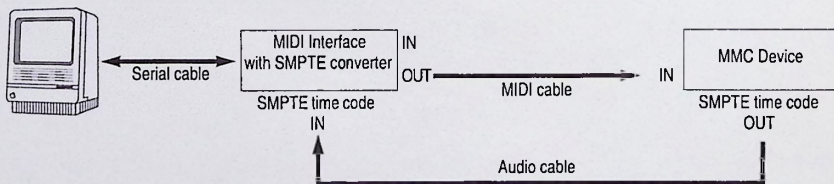
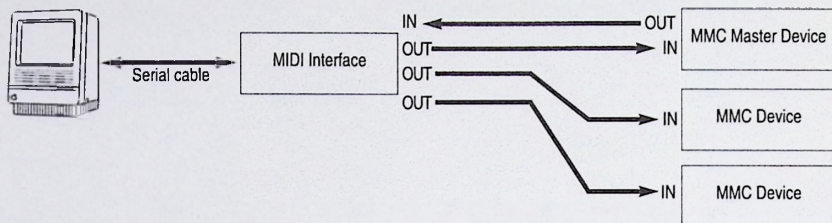


Figure 39-2: If the MMC device generates SMPTE Time Code, connect its time code output to a SMPTE-to-MIDI converter like the MIDI Time Piece II as shown here, which converts it to MTC. Route the resulting MTC to the computer.

Connecting multiple MMC devices

If you have more than one piece of MMC gear, decide which one will be the time code master. Hook up the master device as shown in either Figure 39-1 or Figure 39-2 (whichever is required by the device), and then feed the time code from the master device to the other MMC devices in your setup. Doing so establishes one time code source, which keeps all devices (and Performer) in sync with one another. Connect the remaining devices to your MIDI interface as shown below.



Open-loop versus closed-loop systems

The hardware setups shown in Figure 39-1 and Figure 39-2 support open-loop MMC configurations. Performer does not currently support closed-loop MMC communication. Closed-loop communication is not necessary for accurate synchronization between Performer and MMC hardware.

Setting up Performer

Setting up Performer for MMC is simple. All you need to do is create a MMC device in your FreeMIDI setup.

1. Open the FreeMIDI Setup Application.

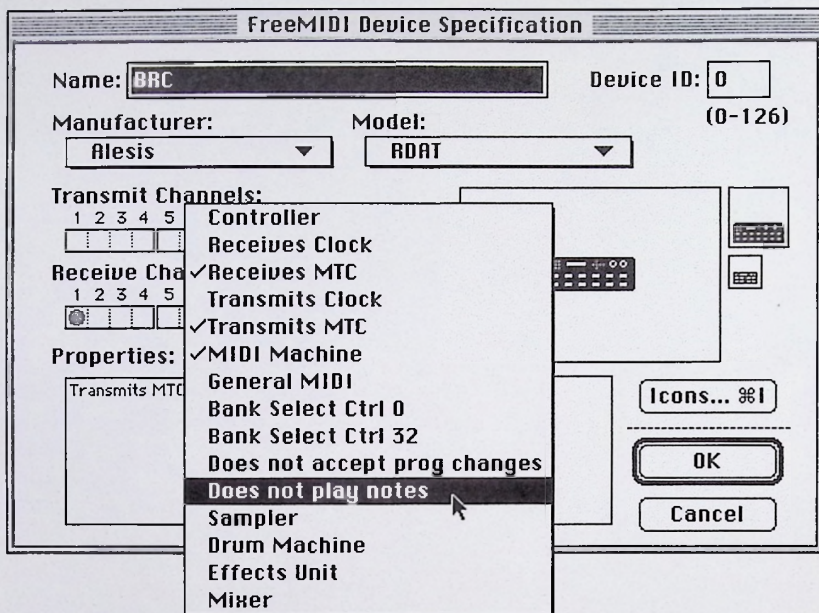
If you are currently running Performer, click the FreeMIDI button in the Control Panel, or choose Edit FreeMIDI Configuration from the Basics menu. Otherwise, double-click the FreeMIDI Setup icon in the Macintosh Finder. The FreeMIDI Setup application launches and your current studio configuration appears.

2. If the MMC device already exists in your FreeMIDI configuration, double-click it. If not, add it using the Create Device command in the Configuration menu.

The FreeMIDI Device Specification window appears.

3. In the Device Specification window, make sure that "MIDI Machine" Device Property is checked in the Device Properties pop-up menu as shown below, as well as the "Receives MTC" and "Transmits MTC" properties.

If any of these items are not checked, select them to check them.



4. Make sure that the Device ID setting correctly matches the setting in the device itself.

☛ If you used FreeMIDI's Auto Config feature to automatically detect the MMC device, the ID setting is already correct. The device ID setting is important because if it is not correct, the MMC device will not respond to Performer.

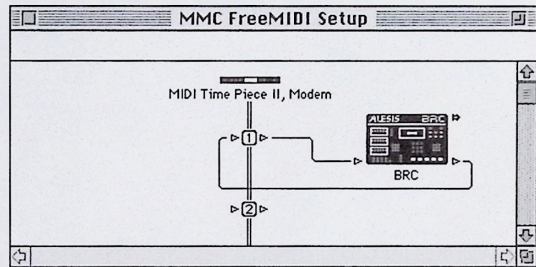
5. If you are creating the FreeMIDI device for the first time, set the rest of the device information as needed.

6. Click OK.

7. Make sure that both the MIDI IN and MIDI OUT ports of the MMC device are connected to the MIDI interface.

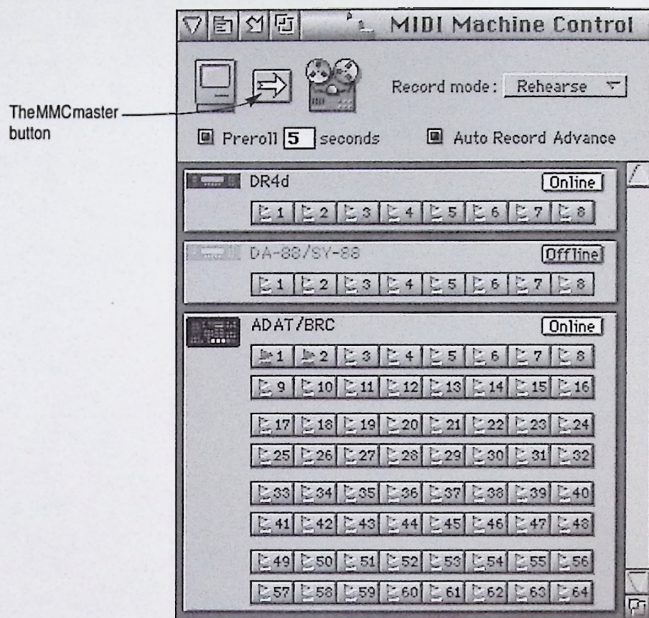
If not, connect them by dragging a patch cord from the MIDI interface port to the device icon. For more information, see "Connecting Devices to Interfaces" on page 696.

The presence of a MMC device in the MIDI configuration activates the MMC features in Performer.



Activating MMC in Performer

Each MMC device that you have defined in your FreeMIDI setup appears in Performer's MIDI Machine Control window, which can be opened from the Windows menu.



The MIDI Machine Control window



The area at the top of the window contains several important buttons MMC-related controls.

The MMC master button

The MMC master button activates all of Performer's MMC features. To activate these MMC features, click the arrow button between the computer and tape deck icon at the top of the window. When this button is on, MMC is activated. In addition, Performer is placed in *Slave to External Sync* mode. For more information about external sync mode, see "Setting Performer's Receive Sync options" on page 638.

The Record mode pop-up menu

The Record mode pop-up menu has three modes: Safe, rehearse, and record.

- **Safe:** no recording can occur in any MMC device
- **Rehearse:** this mode depends on the MMC device. Usually, it causes the device to act as if it is recording, punching in, punching out, etc. but no recording actually occurs.
 - ☞ Make sure that your deck supports rehearse mode before attempting to use this record feature. If it doesn't, rehearse mode may actually record.
- **Record:** allows recording on the currently record-enabled track(s) for any MMC device. To actually record, press the record button in Performer's main transport controls.

Preroll

When this option is checked, MIDI Machine Control devices get cued to 5 seconds before the location you specify with Performer's transport functions. Click the preroll value in the box to change it (1-99 seconds).

Preroll saves you the trouble of figuring out preroll time in your head. Preroll lets you cue Performer to musically intuitive locations or hit points while giving the hardware and Performer enough time to fully synchronize by the time they reach the cue location you chose.

Auto Record Advance

When the Auto Record Advance button is checked, Performer will automatically record-enable the next higher track (or set of tracks for stereo recording) during Memory-cycle recording. As Performer loops the same section over and over, each pass is recorded on a new track (or set of tracks), preserving all previous takes. For example, when you begin cycle-recording, you could record a section on track 1. The second time around the loop, Performer releases track 1 and record-enables track 2, and the second pass gets recorded on track 2. The third time around, Performer record-enables track 3, and the third pass gets recorded there. Performer will continue to record-enable the next track until it records on the highest available track.

- ☛ Make absolutely sure that the consecutive tracks in line for recording do not have material on them that you wish to keep.

When this check box is unchecked, the same track (or tracks) remain record-enabled until you change them manually by clicking the record-enable buttons in the MIDI Machine Control window.

The Auto Record Advance option requires the following preparations in Performer:

1. Memory-cycle must be enabled.
2. Auto-Record must be enabled.
3. The Record mode popup in the MIDI Machine Control window must be set to *Record* mode. (It does not advance in *Safe* or *Rebears* mode.)
4. Performer must punch-in at some point before cycling back to the beginning of the Memory-cycle loop.

Setting up each MMC device

The MIDI Machine Control window provides a list of MMC devices in your FreeMIDI Setup. Any connected device that has the *MIDI Machine* device property assigned to it appears in this window. Several settings are provided for each device.

Device name and icon

The name and icon of the device comes from its name in your FreeMIDI studio configuration. You can change the name using the FreeMIDI Setup application. To change the icon, see “Editing FreeMIDI Icons” on page 759.

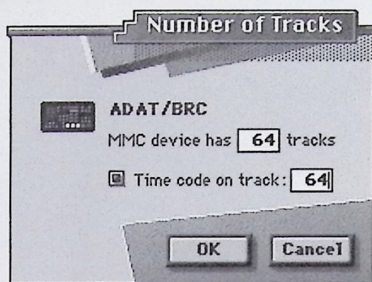
Bringing a MMC device on line

When the *On line* button is selected, the device is on line, which means that it will respond to Performer’s transport control commands. When a device is off line, it will not respond to Performer.

Specifying the number of tracks

The *Set number of tracks...* mini-menu command sets the number of tracks that the MMC device has. Keep in mind that in some situations, a single device in Performer’s MIDI Machine Control window actually

represents several physical devices. For example, an Alesis BRC may be connected to several ADAT's, each with 8 tracks. In this example, you'd want to include the tracks for all of the ADAT's. Be sure to set the number of tracks accordingly.



Setting a timecode track

The timecode track option in the *Set number of tracks* command lets you specify one of the tracks as a timecode track. The timecode track becomes record-protected, and it cannot be record-enabled by the arrow keys (discussed below) or Auto Record Advance. You can record-enable the timecode track manually by clicking it, but a warning appears to confirm that you would like to do so.

Changing the order of the devices in the window

To change the order of the devices in the window, drag the panels up or down.

Ejecting a tape

The Eject mini-menu command ejects the tape from the currently selected MIDI Machine Control device in the list. To select a device, click its name. The device must be on line and the master MIDI Machine Control button must be active for this to work.

Keyboard shortcuts for record-enabling tracks

Option-click a track to record-enable it and at the same time turn off all other record-enabled tracks. Command-click a track to turn it off and record-enable all others.

User the up and down arrow keys to record-enable the next or previous track. This works with adjacent pairs as well.

Setting Performer's Receive Sync options

Selecting a MMC device in the MMC window

To select a device, click its name.

While controlling external MMC devices, Performer actually slaves to time code generated by the MMC hardware to remain synchronized with the hardware during playback and recording, as explained in the diagram below.

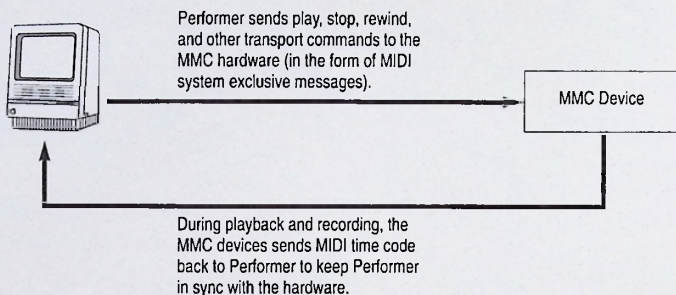


Figure 39-3: When Performer controls the transport functions of MMC hardware, Performer simultaneously slaves to time code from the MMC hardware.

Performer governs the transport control functions, and the MMC device serves as the master timing source to keep them synchronized.

As a result, when you activate MMC control in Performer, Performer is automatically placed in *Slave to external sync* mode, in which Performer slaves to external time code. To successfully slave Performer to the time code, make sure that the settings in Performer's Receive Sync command in the Basics menu match the time code being generated by the MMC master device. For complete information on the Receive Sync dialog settings, see "Slaving to SMPTE with MTC, DTL, or DTLc" on page 609.

Setting Performer's SMPTE start time (offset)

Using Performer's transports to control MMC devices

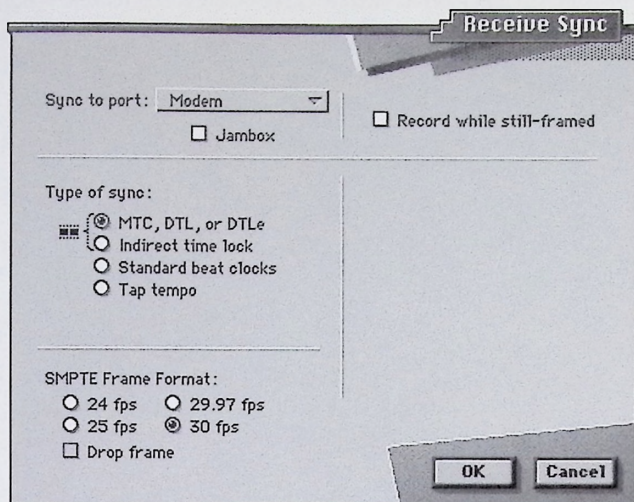


Figure 39-4: Make sure that Performer's Receive Sync dialog box settings (Basics menu) match the time code generated by the master MMC device.

Because MMC control involves SMPTE synchronization, be sure to set Performer's SMPTE start time (SMPTE *offset*) to a value that is appropriate for the time code being generated by the MMC device. To set the start time, click the start time button in the main counter, or select Set Chunk Start from the Chunks window mini-menu. For more information, see "Setting the start time" on page 90.

Once you activate MMC and set up each device as described in the previous sections, Performer will shuttle the transport controls on each on-line MMC device in sync with Performer's own transport controls. For example, when you press play, stop, and rewind in Performer's main transport control panel, each MMC device will do the same.

All of Performer's transport control functions are supported. For example, if you use Memory-cycle to loop over a region, the MMC device will follow. Keep in mind, however, that Performer's transport functions are virtually instantaneous, whereas MMC hardware devices are mechanical devices that take time to cue. As a result, Performer

will stop and wait at times when the MMC device is cueing to a new location. The longer the cue time, the longer the wait will be. Once the MMC device has finished cueing, Performer will resume at the same time as the MMC device.

Transport features that are supported include:

- Play
- Stop
- Rewind
- Pause
- Record
- Auto-punch in/out

Cueing functions include the following:

- Typing a time into the Main Counter
- Using Fast-forward and rewind cueing buttons below the main transports
- Clicking a marker in the Markers window
- Double-clicking in any time ruler
- Memory bar features such as Auto-stop, Auto-rewind, Memory-cycle
- Dragging the scrolling wiper

All of these functions behave normally, except for the waiting period mentioned above.

Recording into Performer while using MMC

Once you have set up MMC in Performer as described in this chapter, you can record MIDI data into Performer in the usual fashion (as described in chapter 9, "Recording"). Record-enable a MIDI track in Performer's track list, press record, and play your controller. All of Performer's MIDI recording features work normally, including Multi-record, Auto punch-in, etc. Since Performer is slaved to the external MMC device, there may be an occasional wait during cueing.

Using Performer to record a track on a MMC device

To record to a track on a MMC device:

1. **Make sure that the device you wish to record on is on line in the MIDI Machine Control window.**

If not, click the Off Line button to bring it on line.

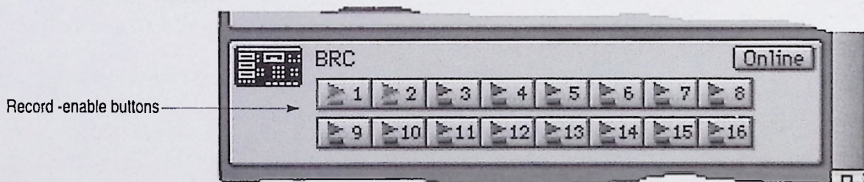
2. **Choose either *Record* or *Rehearse* from the pop-up menu in the MIDI Machine Control window.**

For details about Rehearse mode, see "The Record mode pop-up menu" on page 635.

3. **Record-enable one or more tracks on the device by clicking the appropriate track button(s) in the MIDI Machine Control window.**

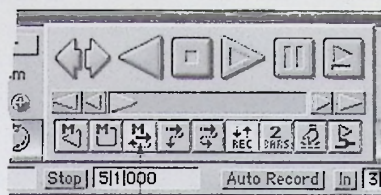
☞ Note: some devices do not support remote record-enabling. If so, record-enable the track directly on the device.

Until you actually begin recording, the record-enable button flashes. When you begin recording, it becomes solid.



4. **If you would like to loop a section to record several passes, click the Memory-cycle button in the Main Control Panel and set the Start and End points in the Track Overview.**

For information about using Memory-cycle, see "The Memory-cycle button" on page 71.



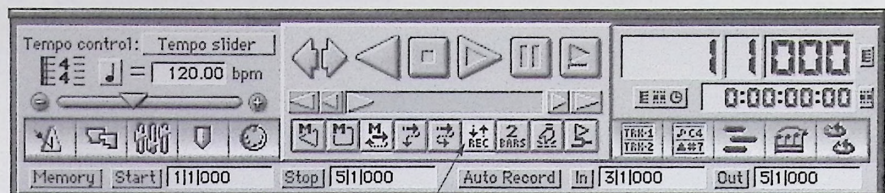
Memory-cycle button

5. If you are going to loop a section with Memory-cycle as described in the previous step, and you would like to record each pass on a new track to preserve each take, check the Auto Record Advance box in the MIDI Machine Controls window.

For details, see “Auto Record Advance” on page 635. Make sure that Auto-record and Memory-cycle are enabled. Also, make sure that the record mode pop-up menu in the MIDI Machine Control window is set to Record mode. Auto Record Advances doesn’t work in Rehearse or Safe mode.

6. If you would like to set punch-in and punch-out points, click Performer’s Auto Punch-in button below the main transports, and set the punch-in and out times in the Memory bar

You can even set punch locations while looping a section with Memory-cycle. In Performer the punch location can be set independently from the loop points. If you want, you can set the in and out times on the fly by clicking the In and Out buttons in the Memory bar during playback. For more information, see “The Auto-Record button” on page 76.



7. To begin recording, cue Performer's main counter to a point that is at least 5 seconds before the punch-in point, or set the pre-roll time in the MIDI Machine Control window to at least 5 seconds.

The amount of pre-roll depends on the device; some may require longer.

8. Press Performer's record button.
9. Record at the punch in location.
10. Press stop to end recording.



Chapter 40 *Using Performer with the MIDI Time PieceTM*

About this chapter

This chapter discusses how Performer and the MIDI Time Piece (MTP) and MIDI Time Piece II (MTP II) work together. This chapter also applies to the MIDI Express and multi-port interfaces from other manufacturers, such as Opcode's Studio 5.

Performer relies on FreeMIDI to identify what type of interface is connected to the Macintosh. FreeMIDI automatically figures out what is connected. If a MIDI Time Piece, MIDI Time Piece II, MIDI Express, Studio 5, or other similar interface is present, several important features are automatically enabled in Performer. The sections below refer to features that are fully documented in other chapters of this manual, such as the MIDI Monitor window. You may want to review these chapters as you read this one; this will help you understand how Performer works with the MIDI Time Piece.

The MIDI Time Piece, MIDI Time piece II, and MIDI Express can each be thought of as four MIDI devices wrapped into a single rack-space unit. Each one is:

- an 8 IN/8 OUT MIDI interface (4 IN/6 OUT in the MIDI Express)
- a MIDI patch bay with routing, channelizing, and muting
- a SMPTE-to-MIDI synchronizer
- a SMPTE time code (LTC) generator

Performer has three features that support them:

- high data transfer rate with FAST mode (not available with the MIDI Express)
- 128 MIDI channels through data cablization (96 channels with the MIDI Express)
- Improved SMPTE synchronization with Enhanced Direct Time LockTM

***High data transfer rate
with FAST mode***

When Performer and the MIDI Time Piece are set to FAST mode, they communicate two to four times faster than a regular interface running at 1 Megahertz. As a result, they sustain greater data throughput to all 8 MIDI OUT cables on the MTP. Fast mode also alleviates irregular timing problems that occur when too much data is being transmitted, commonly referred to as "MIDI logjam."

***128 MIDI channels via 8
independent cables***

The MIDI Time Piece is unique because it offers *eight independent* MIDI INs and MIDI OUTs. *Independent* means that each cable handles its own, separate set of 16 MIDI channels. Eight cables, multiplied by 16 MIDI channels each, equals 128 separate MIDI channels. Performer provides access to all 8 cables and all 128 channels. In addition, up to four MTPs can be networked together for a total of 512 MIDI channels.

The MIDI Express provides 96 MIDI channels (6 outputs times 16 channels each).

In either case, the primary benefit is that you'll never have to worry about overlapping MIDI channels—MIDI channels that are being used by more than one MIDI device at a time. Each device has its own channels, so you'll never have a conflict.

Another benefit is that both the MIDI IN and MIDI OUT of each device can be connected at all times, allowing easy access to and from the instrument. This is especially useful when using a editor/librarian software such as Mark of the Unicorn's Unisyn™.

***Improved SMPTE sync
with Enhanced Direct
Time Lock™***

Enhanced Direct Time Lock (DTLe) is an improved form of the DTL supported in earlier versions of Performer. Instead of one frame advance message per SMPTE frame, DTLe consists of *four* frame advances per frame. In addition, DTL's tape position (full frame) message has been expanded to include the frame rate of the SMPTE and an identification of which device in an MTP network is sending the DTLe.

To fully support DTLe, the MIDI Time Piece sends a tape position message approximately once every second. This prevents even the slightest amount of drift due to small dropouts or other inconsistencies in the SMPTE time code.

Synchronizing to SMPTE with DTLe

When used with Performer, the MIDI Time Piece provides the most reliable SMPTE-to-MIDI lockup available. In addition, DTLe allows Performer to establish lockup without stopping the tape transport. While the film or video tape is rolling, you can press Performer's Play button and the program will jump right into sync with the tape.

Enhanced Direct Time Lock™ (DTLe) is an improved form of DTL supported by earlier versions of Performer. The following sections provide a brief overview of how to sync Performer to SMPTE time code via DTLe and the MIDI Time Piece. If you are not already familiar with the synchronizing process, please refer to the chapter in the MIDI Time Piece user's manual called Working with SMPTE.

The principal benefits of DTLe are: 1) you are less likely to have problems such as dropouts, drifting, etc. and 2) lockup can be achieved *while the tape continues rolling*. You no longer have to stop the tape to reestablish lockup.

Performer still supports old DTL if you are using an original DTL converter. The procedure for using original DTL is the same as for DTLe.

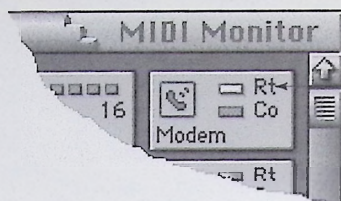
Locking the MTP to SMPTE

To lock the MTP to SMPTE, connect an audio out from the tape deck to the AUDIO IN jack on the rear panel of the MTP. In the MTP Desk Accessory (MTP DA) MIDI Sync window, choose the DTLe option, and make sure that DTLe is being routed to the Macintosh.

To verify lockup, open the SMPTE Reader window from the MTP software and roll the tape. The SMPTE Reader should begin to roll. Lockup is indicated on the MTP by the LTC/LOCK light (LED) on the front panel, which glows steadily as long as the MTP is locked. In addition, the POWER/TACH (tachometer) LED flashes regularly once per second. If the LEDs flicker erratically, the MIDI Time Piece is not locking up consistently. Try boosting or attenuating the SMPTE output from the tape deck.

Using the MIDI Monitor to check incoming DTLe

To verify that Performer is receiving the incoming DTLe properly, use the MIDI Monitor window. When DTLe is being received, the RT light turns dark (due to the four F8 bytes being received each frame):



The real-time data light ("Rt") lights up when Performer is successfully receiving DTLe.

Locking Performer to the MTP

Once the MTP has been successfully locked to tape, and you have verified that it is sending DTLe to Performer, lockup is easy. Choose MTC/DTL/DTLe in the Receive Sync dialog box, set a start time in the counter with the Start Time button, choose Slave to External Sync, press Play (or Record), and roll the tape. You can press stop at any time and reestablish lockup by pressing Play again, even while the tape is rolling.

Troubleshooting

If you have trouble establishing lockup, refer to the MIDI Time Piece manual SMPTE chapter for detailed, step-by-step instructions. Also refer to "Slaving to SMPTE with MTC, DTL, or DTLe" on page 609.

If you continue to have problems, check out the troubleshooting chapter at the end of the MTP manual. It discusses solutions to common synchronization problems.

Chapter 41 *Performer & the Video Time Piece*

The Video Time Piece is Mark of the Unicorn's affordable SMPTE/VITC/MIDI time code converter and character generator. VITC (*Vertical Interval Time Code*) is SMPTE time code that is recorded directly in the video signal, freeing up both audio tracks and allowing lockup to be maintained while freeze-framing or frame-advancing the video.

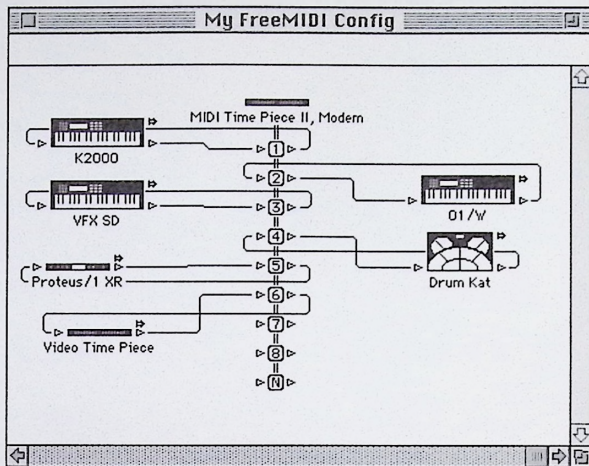
Performer supports many of the Video Time Piece's unique features. With the Performer/Video Time Piece combination you can:

- Lock Performer to VITC and remain in sync while frame advancing
- Download Markers as streamers to the video display
- Display a Conductor Crawl Line that displays the hit point of each downbeat in the sequence
- Convert an audio click track into a Performer tempo map in the Conductor track
- Prevent dropouts during tape sync with adjustable freewheeling

Setting Up Performer

To set up Performer for the Video Time Piece, you need to add the Video Time Piece to your FreeMIDI configuration using the FreeMIDI setup application. If Performer is currently running, you can launch

FreeMIDI setup by choosing Edit FreeMIDI Configuration from the Basics menu. Choose Create Device from the Configuration menu and set up the options as needed.



When you have a Video Time Piece in your FreeMIDI configuration as shown above, special features for the Video Time Piece are automatically enabled in Performer; they are discussed in this chapter.

Once you have installed the Video Time Piece, you can lock Performer to video that has been recorded with VITC or LTC.

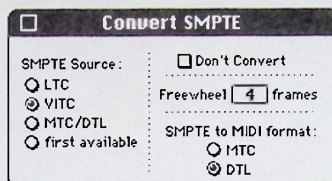
Before attempting lockup to VITC, it is a good idea to make sure that the Video Time Piece is successfully converting the VITC into MIDI sync and transmitting the sync data to Performer and the Macintosh.

Locking Performer to VITC

Verifying Incoming Time Code with the MIDI Monitor

To verify incoming time code from the Video Time Piece:

1. Open the Video Time Piece desk accessory and open the Convert SMPTE window.



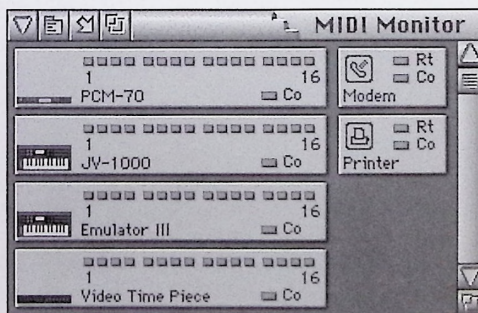
2. Choose the VITC option and the DTL (Direct Time Lock) option.

Alternately, you can use MTC (MIDI Time Code) option.

3. Roll the Video tape.

When the VITC LOCK light on the Video Time Piece indicates that lockup has been achieved, the COMPUTER OUT LED should begin to glow, indicating that the Video Time Piece is sending DTL (or MTC) to the Macintosh and Performer.

4. Open Performer's MIDI Monitor window.



If you are using Direct Time Lock enhanced, the "Rt" light on the port to which the VTP is connected will turn black. In addition, the Co light on the Video Time Piece panel will blink regularly if DTLe is being successfully received by Performer.

The Co light will turn black if you are using MTC.

Locking Up Performer

You can now lock up Performer, even while the video tape is still rolling:

1. **Choose the MTC/DTL/DTLe timecode option in Performer's Receive Sync dialog box.**

Be sure to match the same type of sync that the Video Time Piece is sending.

2. **Enable the Record while still-framed option in the Receive Sync dialog box.**

This causes Performer to remain in record when you are frame-advancing.

3. **Choose Slave to external sync from the Basics menu.**

This puts Performer into slave mode.

4. **Press the Play or Record buttons.**

You can do so even while the tape is rolling. Performer will immediately lock to the tape. If necessary, you may have to stop and adjust the start time in the Counter. (Click the Start Time button to do so.)

Recording Hits While Frame Advancing

To record hits while frame-advancing:

1. **Freeze the video image.**

Performer will also stop at the frozen video SMPTE frame.

2. **Choose Add from the Markers window mini-menu or play a MIDI event into the currently record-enabled track.**

The new marker will be added to the list at the current tape location. If the Markers window isn't already open, press stop, open it, and press play again.

3. **Advance to the next hit using your VCR's frame-advance button.**

Performer will follow along.

4. Repeat the above two steps as many times as necessary.

When you are through, you can rename each marker and lock it to its SMPTE time.

Performer remains in sync during freeze-frame because the VCR tape heads keep spinning—even when the tape is stopped. Thus, they continually scan the video image (and the VITC). The Video Time Piece, in turn, remains locked to the frozen image as it is being continually scanned and sends periodic tape position messages to Performer to let Performer know where the current tape location is. You can see these periodic tape position messages as brief flashes on the COMPUTER OUT LED on the Video Time Piece. To record notes, you must have the Record while still-framed option checked in the Receive Sync dialog box.

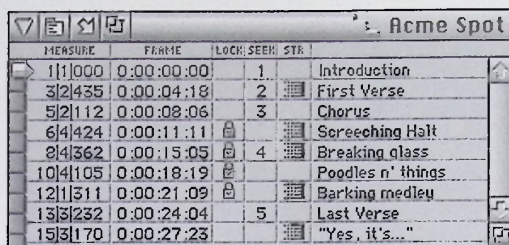
Using Streamers

The Markers window has an additional capability designed for the Video Time Piece's character generator. The Video Time Piece can superimpose graphic images on a video picture, including *streamers*. A streamer is a solid white bar that travels across a video screen from left to right to reach the right-hand side of the screen at an exact hit point. Streamers help studio musicians and sound effects engineers to anticipate hit points during video post-production.

Performer's markers have the ability to serve as triggers for streamers generated by the Video Time Piece. Here is how it works: while Performer is slaved to the video via SMPTE time code and the Video Time Piece, it sends a message to the Video Time Piece several seconds before playback reaches the marker location. This message tells the Video Time Piece the name of the marker and its exact location. To warn the viewer of the approaching hit point, the Video Time Piece immediately displays the name of the marker on screen for several seconds before the streamer. The Video Time Piece then displays a moving streamer for the marker such that the streamer hits the right side of the screen at the exact SMPTE frame location of the marker.

Enabling Streamers

To enable streamers in Performer, check the "Generate VTP Streamers" mini-menu command. Then you will see the Streamers column next to the marker names in the Markers window:



MEASURE	FRAME	LOCK	SEEN	STR	Marker Name
1 1 000	0:00:00:00			1	Introduction
3 2 435	0:00:04:18			2	First Verse
5 2 112	0:00:08:06			3	Chorus
6 4 424	0:00:11:11				Screeching Halt
8 4 362	0:00:15:05			4	Breaking glass
10 4 105	0:00:18:19				Poodles n' things
12 1 311	0:00:21:09				Barking medley
13 3 232	0:00:24:04			5	Last Verse
15 3 170	0:00:27:23				"Yes, it's..."

VTP Streamers

To enable a streamer for a marker, click in the Streamer column next to the marker name and the streamer icon will appear. The marker will then appear as a streamer on the Video Time Piece's video picture. If you option-click, the marker will be assigned a streamer and all others will not. Conversely, if you command-click, all markers except the one you click will be assigned a streamer.

Streamer Hints

Remember that marker names are displayed onscreen for approximately 3 seconds before the streamer. If your markers are closer than 3 seconds to one another, they may overlap onscreen; that is, the name of the second marker may be displayed before the first marker's streamer.

When the Video Time Piece displays the name of the marker, it displays up to 20 characters. Names longer than 20 characters will be cut off. So, you may want to keep your marker names as short as possible.

Displaying the Conductor Crawl Line

Together, Performer and the Video Time Piece have the ability to display a crawl line on the video screen. A crawl line is a series of white "blips" that travel across the video screen from right to left, striking the left-hand side of the screen in time with each beat of music in the Performer sequence. The Conductor Crawl Line is useful for lining up downbeats in your Performer sequence with hit points on the video.

Performer triggers each beat in the Conductor Crawl line when the Click feature in the Basics menu is enabled. To set up the click feature:

1. Choose Click & Countoff Options from the Basics menu.

If you do not want to hear the click, uncheck both the Internal speaker and MIDI options.

2. If you do want to hear the click, check the option you would like and, if necessary, enter the data for the MIDI click.

Choose the Always click option.

3. Click OK to confirm your choices.

4. Select Click from the Basics menu to enable the click.

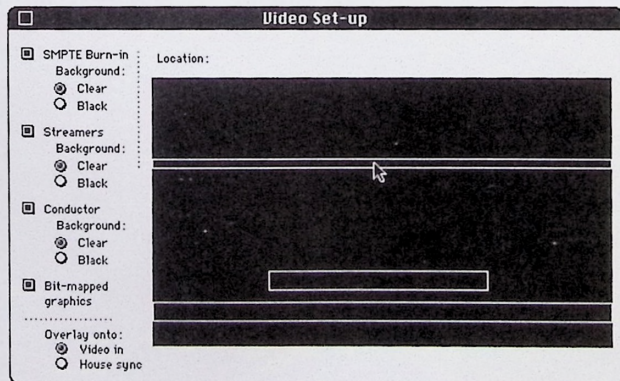
The Click menu item will become checked.

To display the Conductor Crawl line:

1. Choose Video Time Piece from the Apple menu to open the VTP DA.

2. Choose Video Setup from the VTP menu.

The Video Setup window will appear.



Converting a Click Track into a Tempo Map

Verifying Incoming MIDI Clicks with the MIDI Monitor

3. Check the Conductor option.

You can choose a clear or black background for it, and you can adjust its position on the video screen by dragging the crawl line display up or down in the Video Setup window.

4. To turn off the Conductor Crawl Line, simply uncheck the option or turn off Performer's click.

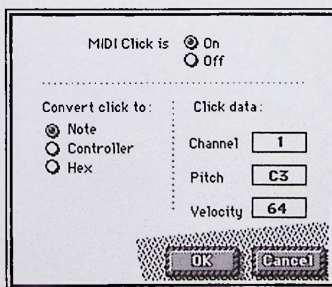
With the Video Time Piece, you can convert an audio click track into a MIDI event. This allows you to convert the click track into a tempo map in a Performer sequence's Conductor track. You can even record the tempo map while Performer's time base is referenced to SMPTE time code, allowing you to accurately synchronize a Performer sequence to prerecorded music.

Before attempting to convert the click track into a tempo map, make sure that the Video Time Piece is successfully converting the audio click into MIDI data and transmitting the data to Performer and the Macintosh.

To verify incoming MIDI clicks from the Video Time Piece:

1. Make sure that an audio cable is plugged into the **CLICK IN** phone jack on the rear panel of the Video Time Piece.
2. Choose Video Time Piece from the Apple menu to open the VTP DA.
3. Choose Set Click to MIDI from the VTP menu.

The Click to MIDI dialog box will appear.



4. **Choose the MIDI data type and parameters for the MIDI click.**

Most of the time, any event will do, such as a note like C3.

5. **Click OK to Confirm your choice.**

6. **Roll the tape.**

When the CLICK light on the Video Time Piece indicates that the click is being received, the COMPUTER OUT LED should begin to blink, indicating that the Video Time Piece is sending the MIDI click event to the Macintosh and Performer.

7. **Open Performer's MIDI Monitor window.**

8. **A channel light (and cable light with the MTP) will flash if the MIDI click is being successfully received by Performer.**

If none of the channel lights flash, check your connections and try again.

Setting Up Tap Tempo

The next step is to set up the Tap Tempo options in the Receive Sync dialog box.

1. **Choose Receive Sync from the Basics menu and select the Tap Tempo option.**
2. **Choose Video Time Piece from the device pop-up menu.**
3. **Press the tab key to move to the Event parameter and play in the MIDI click event by simply rolling the tape.**

Since you have already successfully set up the MIDI click in the previous section, as soon as you roll the tape, Performer will receive the MIDI click event from the Video Time Piece and enter the proper value in the Event box.

4. **Type in the number of countoff beats.**

Be sure to type in the same number of countoff beats as there are on the click track on tape.

5. **If you do not need to synchronize the sequence containing the resulting tempo map to the tape with the audio click track, choose the Internal clock option.**

Checking Tap Tempo

Recording the Tempo Map

6. If, later on, you will be synchronizing the sequencing containing the resulting tempo map to the tape with the audio click track, choose the External time code option and check the Capture start time box.

These options tell Performer to reference your clicks to time code while it is recording the tempo map. By doing so, Performer will then be able to accurately synchronize the resulting tempo map with the tape.

7. Click OK to confirm your choices.

Before recording anything, check to make sure Performer will follow the MIDI clicks sent by the Video Time Piece.

1. Choose Slave to external sync from the Basics menu.
2. Press the Play button.
3. Roll the tape.

After a few bars or so of countoff click, the sequence will begin to play back, following the clicks on tape. If not, check the MIDI Monitor window to make sure Performer is receiving the MIDI click. Also check the Tap Tempo options in the Receive Sync dialog.

4. Stop the tape and rewind it to the beginning of the cue.

You are now ready to record the tempo map.

If you will be synchronizing the sequence containing the new tempo map to the click track using SMPTE time code, make sure that you:

- already have SMPTE time code recorded on one track and the click recorded on another
- already have Performer and the Video Time Piece set up for SMPTE synchronization *such that when you roll the tape, Performer is receiving both the MIDI click and Direct Time Lock (or MIDI Time Code) at the same time*
- have selected the *External time code* and *Capture start time* options in the Receive Sync dialog box

☞ Please note: if you want to be able to synchronize the sequence to the click track via SMPTE, it is absolutely necessary that Performer is receiving both the MIDI click and either DTL or MTC when you record the tempo map.

To record the tempo map:

1. **Record-enable the Conductor track in the Tracks window.**
2. **Press the Record button in the main transport controls.**
3. **Roll the tape.**

If you chose the Capture start time option and are referenced to time code, Performer will remember the exact SMPTE frame of the tap that is the first downbeat and automatically remember to start the sequence at that SMPTE frame when you lock the sequence to SMPTE afterwards.

4. **When you are finished recording, stop the tape.**

Performer may take a few moments to process the new tempo data.

You now have a new tempo map that matches the click track on tape.

Locking the Recorded Tempo Map to Tape

If you recorded the tempo map referenced to time code, you can now lock the sequence to tape. Just choose the Direct Time Lock (or MIDI Time Code) option in the Receive Sync dialog box, make sure the Metronome is under Conductor track tempo control, and roll the tape. The Capture start time option automatically sets the Chunk SMPTE start time, so the first downbeat of the sequence should occur at exactly the first click downbeat (not including countoff beats, of course).

Preventing Dropouts While Slaved to SMPTE

The Video Time Piece has an adjustable freewheeling feature. When a SMPTE reader such as the Video Time Piece encounters a drop-out—a series of missing or unreadable frames—in the SMPTE time code, it “freewheels” past them, pretending that they were not missing and briefly generating its own code to make up for the missing frames.

Most converters will freewheel for only up to 3 or 4 frames. The Video Time Piece can freewheel from 0 frames up to 127 frames (over 4 seconds). This allows it to maintain lockup with Performer over even the most pernicious SMPTE drop outs.

If you encounter a time code drop out while slaving Performer to tape with the Video Time Piece, try increasing the freewheel amount in the Convert SMPTE window. The default value is 4 frames. Try adding a few frames at a time when adjusting the amount.

Chapter 42 *Tap Tempo While Slaved To Tape*

Tapping to Prerecorded Music on Tape

You can use Tap Tempo to record a tempo map while Performer is slaved to tape—or, more accurately, *referenced* to external time code. You can record a tempo map that matches the music on tape, allowing you to synchronize your sequence to the prerecorded music.

This process can be performed in a more precise fashion if you have an audio click track recorded on the tape and a click-to-MIDI converter such as Mark of the Unicorn's Video Time Piece™. For more information, please refer to the chapter called *Performer and the Video Time Piece*.

The following are general points to consider before tapping tempo to prerecorded music:

Before you begin, establish SMPTE synchronization to tape. This is necessary for two reasons: 1) Performer needs to receive a timing reference from the tape while creating the tap tempo map, and 2) later on, after you successfully record the tempo map, you will be using the SMPTE to lock the sequence to the tape. To establish SMPTE synchronization, simply sync Performer to the tape in the fashion that you normally do with Direct Time Lock (DTL), Direct Time Lock Enhanced (DTLe) or MIDI Time Code (MTC). If you have never synchronized Performer to SMPTE, now is a good time review the *Receive Sync* chapter. (Please note that you must synchronize to tape via MIDI Time Code or *Enhanced* Direct Time Lock.)

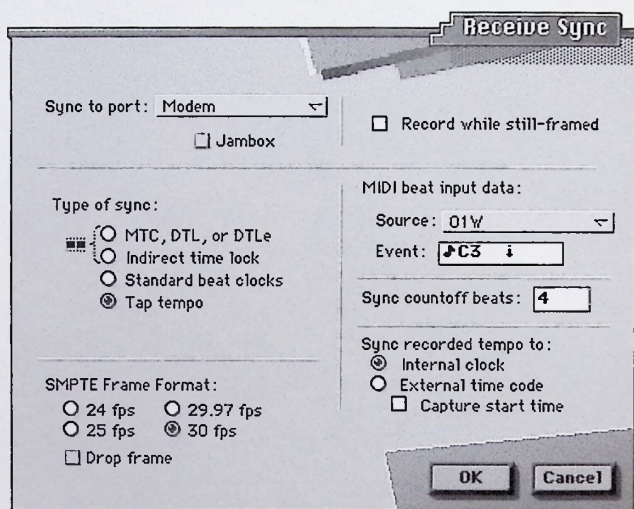
Once you have set up SMPTE sync, set up Tap Tempo. To do so, simply follow the directions in the *Receive Sync* chapter called *Setting Up Tap Tempo*. Test it to be sure that when you tap, Performer does indeed follow your taps. This will ensure that you have the proper channel and event for Tap Tempo mode. Remember, you may also need to set up a meter map in the sequence that matches the meter map of the music on tape.

Tapping Tempo While Referenced to Tape

If possible, set up two full measures of countoff on the tape before the first downbeat of music. This will be extremely helpful to your accuracy when tapping the first downbeat, which is the most important downbeat because all subsequent taps—the entire tempo map—will be referenced to its exact location.

Once you have made these preparations, you are ready to begin. To Tap Tempo to prerecorded music on tape:

1. Open the Receive Sync dialog box from the Basics menu.



2. Set the Sync to port option to the port that will be receiving the SMPTE sync data from tape.

For example, if your SMPTE-to-MIDI converter is sending Enhanced Direct Time Lock to the modem port, select the modem port. (If the converter does not send Direct Time Lock or Direct Time Lock enhanced, use MIDI Time Code instead.)

3. Select the Tap Tempo option.

The tap event can be received from any controller device on either serial port.

4. Type in a number of countoff beats.

Be sure that the number of countoff beats you choose here corresponds in a useful way to the number of countoff beats on tape. For example, ideally, you should have 2 measures of countoff on tape; if so, set the countoff beats here to 1 measure. When you roll the tape, you can get ready during the first bar of countoff, tap along for the second bar, and hit the downbeat right on the money. If you don't have an countoff on the tape, you will have to develop a system that works best for you. You might try just one countoff beat.

5. Enter the beat input data.

6. Select the External time code option.

Performer will now reference your taps to incoming DTL, DTLc, or MTC.

7. Select the Capture start time option.

This option makes Performer remember the exact SMPTE frame of your first tap (excluding the countoff beats) so the sequence will start at the correct SMPTE time.

8. Click OK to confirm your choices and close the dialog box.

9. Record-enable the Conductor Track.

10. Choose Slave to External Sync from the Basics menu.

11. Press the Record button in the main transport controls.

12. Get ready to tap, and roll the tape.

13. Listen for the countoff, and 'tap' along with it such that the first downbeat of the sequence corresponds to the first downbeat of music on tape.

Performer automatically remembers the exact SMPTE time of your tap on the first downbeat of the sequence and saves it as the Chunk start time. When you later slave the sequence to tape, Performer will automatically start the sequence at the correct SMPTE time.

Listening to What You Have Done

14. Tap along with the music as accurately as you can.

Remember that synchronization later on will only be as accurate as the accuracy with which you tap in this procedure.

15. To end recording, press the Stop button in the main transport controls.

Don't be alarmed if the Macintosh wristwatch icon remains onscreen for an extended period of time after you stop recording. Performer is calculating precise tempo changes from the taps you just recorded.

Now that you have recorded the tempo map, try slaving Performer to the tape using your usual method of synchronization, such as Direct Time Lock or MIDI Time Code, in the Receive Sync dialog box. Also, make sure that the Metronome is under Conductor track tempo control. You will now be able to playback, rewind, or fast forward anywhere in the song on tape, and your Performer sequence will exactly reproduce your tapping performance with respect to the music on tape. If you tapped accurately, Performer will play along accurately. If you goofed, so will Performer. You can always try again.

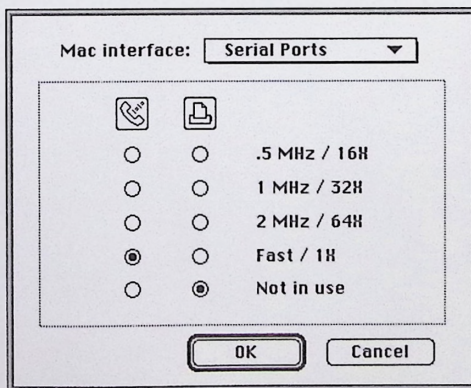
Chapter 43 *Printing*

Checking your serial ports before you print

This chapter explains how to:

- Print out the contents of a Performer list window, such as the Event List, Tracks, Markers, Chunks, and Remote Controls windows.
- Print one or more tracks as music notation and display the results on the computer screen or print them on a printer
- Customize the page layout for notation printing
- Get best-looking results when printing notation

Before you print anything—either a list window or notation, consider which Macintosh serial port you will be using for printing. To check the status of the serial ports, choose Interface Settings from the Basics menu. These settings reflect your current FreeMIDI studio configuration.



Printing the Contents of a List Window

In the example above, the printer port is "Not in Use", which means that it is OK to print if your printer is connected to it. If your printer is connected to modem port in this example, you'd need to change the way the serial ports are set up for MIDI.

Using MIDI on one port and printing on the other

If you plan to do a lot of printing from Performer, your best bet is to use one serial port for MIDI and the other for printing as shown above. Affordable multi-port MIDI interfaces such as Mark of the Unicorn's MIDI Express and MIDI Time Piece II provide a convenient connection for all of your MIDI gear through one Macintosh serial port.

Printing when you use MIDI on both serial ports

Depending on your MIDI setup, you may require MIDI on both serial ports. For example, you may have a large MIDI rig that requires multi-port interfaces connected both serial ports, or you may have an old MIDI interface that calls for using both ports. In either case, you probably have your printer connected to a "thru" port on the interface. When you want to print something, you press a "thru" switch to temporarily suspend MIDI and allow printing.

In this scenario, MIDI activity must be temporarily suspended on the serial port being used for MIDI. Use the Interface Settings command in the Basics menu to temporarily set the port to *No Interface* while printing.

To print the contents of a track's Event List window, the Tracks Window, the Markers Window, the Chunks list window, or the Remote Controls window:

1. **Bring the window you want to print to the front to make it the active window.**

To do so, click its title bar or choose its name from the Windows menu.

2. **Open the Chooser from the Apple menu and select the desired printer and serial port.**

See "Checking your serial ports before you print" on page 665.

Printing Notation

- 3. Choose Page Setup from the File menu, make any desired changes to the page settings, and click OK to confirm the settings.**

The options that appear in this dialog box depend on the type of printer you are using. For example, if you are printing on a laser printer, you can choose an enlargement or reduction above or below 100%.

- 4. Choose Print from the File menu.**

The standard print setup dialog box appears for your printer.

- 5. Set up the printer options as needed, such as the number of copies, and click OK.**

The entire contents of the list is printed.

Printing notation in Performer is easy, as you'll see in the following sections. Performer transcribes unquantized or quantized MIDI data in a readable fashion. You can format the music on screen exactly as it will print, including text, page margins, staff spacing, measure spacing, and more.

To print notation:

- 1. Open the Chooser from the Apple menu and select the desired printer and serial port.**

See "Checking your serial ports before you print" on page 665.

- 2. Choose Page Setup from the File menu, choose the desired page size, make any desired changes to the page settings, and click OK to confirm the settings.**

The options that appear in this dialog box depend on the type of printer you are using. For example, if you are printing on a laser printer, you can choose an enlargement or reduction above or below 100%.

3. **Select the data or the region of data that you would like to print using any method of selection that you prefer.**

Performer is extremely flexible because you can use any one of Performer's many ways to select data—from a single note to the entire piece. You can select any portion of a track, or any portion of multiple tracks. See "Choosing what tracks to display" on page 347 for more information.

4. **Click the QuickScribe notation editing window button in the Consolidated Controls window.**

A window appears containing staves for the track or tracks you have selected. This window displays the music on a page exactly as it will print out. For information about editing music and formatting it in this window, see chapter chapter 23, "QuickScribe Notation".

5. **Use the QuickScribe window mini-menu and Page Setup commands to format the music on the page as desired.**

Summarized below, these menu commands are discussed in detail in chapter chapter 23, "QuickScribe Notation".

Formatting command:

Brief description:

Score Options
(Mini-menu)

Provides control for title page, staff names, measure numbering and spacing, and staff spacing.

Page Margins
(Mini-menu)

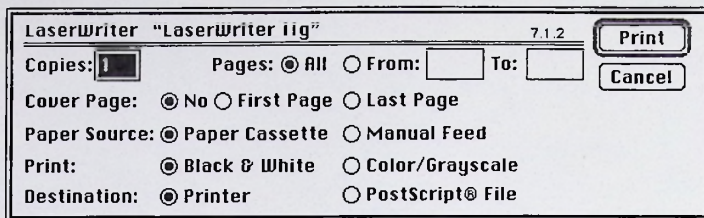
Lets you adjust top, bottom, left, and right page margins.

6. **Add text as desired with the text tools in the Tools palette.**

See "Working with text" on page 367 for more information.

7. Choose Print from the File menu.

The standard print setup dialog box appears for your printer. For example, if you are printing with an Apple LaserWriter in System 7, you'll see the window below:



8. Set up the printer options as needed, such as the number of copies desired, and click Print.

Performer proceeds to print the document, providing you with a status window as it does.

Chapter 44 *Using Performer With Unisyn*

What is Unisyn?

Unisyn is Mark of the Unicorn's state-of-the-art editor librarian software. Unisyn provides you with a complete MIDI sound management environment, coupled with powerful tools for creating and editing sounds.

How Are Unisyn and Performer Integrated?

Unisyn and Performer are both FreeMIDI compatible applications. As a result, they are integrated with one another through FreeMIDI in the following ways:

- FreeMIDI allows Performer to play back a sequence in the background when you switch into Unisyn under System 7 (or MultiFinder in System 6) to audition patches, edit a patch, or perform any other task in Unisyn.
- While you are working in Unisyn, you can start, stop, and play a Performer sequence without ever leaving Unisyn.
- Unisyn keeps all of the FreeMIDI patch lists completely up to date. In turn, FreeMIDI shares the patch lists with Performer and all other FreeMIDI compatible applications. These patch lists show up through Performer, most notably in the Tracks window default patch and current patch columns.

Integration Happens Automatically

With FreeMIDI installed in your system, all of the integration features above happen automatically as you use Performer and Unisyn. No additional effort is required on your part.

Selecting Sounds

With Performer and Unisyn working together, you have many choices for how to select sounds in your sequences. In general, they fall into two general approaches:

1. Using patch change events in Performer
2. Using Unisyn for general sound management

Using Patch Change Events in Performer

These approaches are discussed in the following sections. Which approach you will use depends on how you work. These considerations are also discussed.

One way to select sounds is to choose them by name from Performer's patch list pop-up menus. For example, you can select a default patch for each track in the Performer's Tracks window. When you play the sequence from the beginning, the default patch gets transmitted to the synth to recall the patch before music begins playing. You can also insert (or record) patch change events in the sequence's tracks to change sounds during playback.

The critical concept with this approach is that you are dealing with MIDI patch change events, which are MIDI events numbered from zero to 127. Unisyn provides names so that you can conveniently refer to them by name, rather than by number.

When managing sounds in this fashion in Performer, Unisyn serves two purposes:

1. To provide Performer with accurate names in the patch lists—that is, names of patches that are currently in the synth. For example, if you send a bank to a synth from Unisyn, the patch names from that bank will be displayed in Performer's patch lists. If you then send a different bank to the synth, Unisyn updates Performer's patch lists to the patches in the new bank.
2. To save the current bank in each synth in a performance so that this same bank can be restored when you work on the sequence at a later time.

If you don't save the current banks as a performance in Unisyn, you have no easy way to restore the banks if you need to work on the sequence at a later date. If you don't restore the patch banks, the patch lists in Performer may not be the ones you originally used, and your default patch selections, as well as patch changes you've inserted in tracks, won't recall the correct sounds.

Advantages

As you can see, the integrity of this approach depends on having the correct banks of sounds loaded in the synth. If you don't change banks in your synths, handling sounds in this manner works very well, and the only role Unisyn plays is to provide accurate factory

preset patch lists. This is the easiest way to handle sound selection because everything is done in Performer alone. Once Unisyn has provided the patch lists, you don't even need to run it when using Performer.

If you do change banks in your synths, this approach still works fine. But be absolutely sure to save the banks to disk in Unisyn and include them in the performance that you create for the sequence. This technique is described further in "Using Unisyn for General Sound Management" on page 674.

Of course, if you know you'll never be working on the project again, and you will never need to recall the sound setup, you certainly don't need to save a Unisyn performance.

Disadvantages

When you select a patch from Performer's patch list pop-up menu, sometimes what you selected won't be what you hear. This is because many synths have more than one "mode", e.g. "multi" and "voice" mode, which have a dramatic effect on what happens when you send a patch change to the synth from Performer. If the synth is not in the right mode, you won't get the patch you expect. You must learn enough about your synths to choose the necessary mode, either from its front panel controls or by selecting the appropriate module in Unisyn's Modules window (depending on the synth). Refer to the synth's documentation for clues.

Another drawback to this method is that you are limited to the zero through 127 range of patch changes allowed by MIDI, which, for most synths, only select RAM sounds. New synths support a new MIDI command called *bank select*, which provides direct access to many more ROM sounds; however, if a synth is more than about a year old, it won't support bank select. As a result, you are forced to go through considerable gymnastics in the synth to have access to all your patches via MIDI patch change events.

In general, if a synth has many ROM sounds, you will have an easier time selecting sounds for it with Unisyn rather than with patch lists in Performer.

Patch Maps

Some synths, such as the E-mu Proteus, address the 128-patch limitation by providing a "patch map" which lets you choose from a larger set of sounds. However, Unisyn doesn't take patch mapping

into consideration when providing patch lists to Performer, so once again you are left with a situation where the patch you select in Performer won't be the one you hear from the synth.

Unisyn sets up Performer's patch list so that the first patch in the list always selects the first patch in Unisyn's bank window, the second selects the second patch, etc. If your synth has a programmable patch map, it should be permanently set to correspond in this fashion. If you need to access patches that are not available via the program change table, use Unisyn to copy them into RAM locations that are available via the program change table. If you employ this technique, the patch list in Performer should show the correct name.

- ☛ The E-mu Proteus 1,2, or 3 are exceptions. Patch 0 in Performer's patch list selects ROM preset 000. Patch 64 in Performer's patch list selection RAM preset 064, patch 65 selects RAM present 065, etc. (This exception does not apply to the Proteus XR.)

Updating Unisyn

In general, Unisyn keeps Performer completely updated as far as what patches are available in your synths. Performer's patch menus should always reflect the sounds currently available via patch changes sent from Performer.

On the other hand, Performer doesn't have the same powerful features as Unisyn, so it cannot automatically inform Unisyn if you select a different patch from its patch list. If you make patch selections in Performer and you want Unisyn to know about them (such as to save them in a Unisyn performance), use the Get Group/All Patches command in Unisyn after you make the changes to update Unisyn. If you select patches entirely in Performer, however, there's no need to update Unisyn in this fashion, unless you need to edit a patch.

Using Unisyn for General Sound Management

Beyond its integration with Performer, Unisyn has many features of its own that serve as a powerful compliment to Performer. By following the general guidelines below, you can select all your sounds and banks via Unisyn and then save them as a Unisyn performance, which captures the entire state of your MIDI setup for the Performer sequence you are working on. You can easily recall

this setup before you begin work on the sequence at a later date. Using this approach, you can rely on Unisyn to handle most, if not all, of your sound selection needs.

- ☛ The tasks below are basic Unisyn procedures that you will become very familiar with as you learn Unisyn. They are explained in detail in the Unisyn manual.

Creating a Performer/ Unisyn Project

Use Performer to create your sequence, and use Unisyn to select the desired banks and patches for the sequence.

After you have set up your synths with the correct banks, and you have selected all of the appropriate sounds for the tracks in your sequence, go into Unisyn and create a performance to save them for the sequence. To keep things clear, you might want to give the performance the same name as the sequence, such as "On the Road Again/Sounds&Banks".

If you are using patch change events in the tracks of your sequence to change patches during playback, or if you used Performer's "Default Patch" feature, be sure to save the necessary banks with the performance. This ensures that the synth will have the correct bank of sounds the next time you work on the sequence.

Recalling the Project

To recall the project, load it's corresponding Unisyn Performance before you begin playing the sequence. By doing so, you load all of the correct patch banks and sounds for each module so that the sequence plays back with the correct sounds.

Advantages

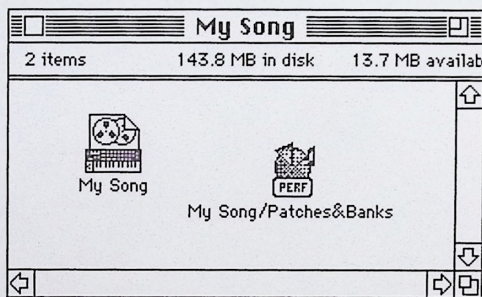
Using Unisyn gives you many powerful capabilities, such as patch editing, sound libraries, and more. In terms of sound selection, you get the best of both worlds: you can select sounds using both Performer's patch changes and Unisyn's sound management features. However, you need to decide how you are going to choose default patches for each track: either by using Performer's default patch feature (in the Tracks window) or by saving patches for Unisyn's modules in a Unisyn performance file. You may find that the decision differs for each synth and depends on how you use the synth.

By using Unisyn's libraries and powerful searching features, you potentially have thousands of sounds at your fingertips, as opposed to the restricted 0-127 range imposed by MIDI patch changes.

Disadvantages

Another great advantage is that you can easily incorporate Unisyn's patch editing capabilities into your sequencing. Does that bass patch need more snap in the attack? Just open Unisyn's Patch Edit window and tweak away. You can even do so while the sequence is playing.

The only (small) price you pay for using Unisyn to its fullest potential with Performer is that there is a bit of extra housekeeping required on your part. You need to organize your files on the hard disk in a way that makes it easy for you to determine which Unisyn performance file goes with which Performer sequence file. Here's a suggestion: create a folder for the project and place the Performer sequence file and the Unisyn performance file together in the folder.



Troubleshooting

Here are a few common problems you might encounter.

You get a "Not enough memory" message when you try to run both Performer and Unisyn at the same time.

Cause: There isn't enough free RAM (random access memory) in your computer to support the memory requirements of both applications at the same. Solution: Make sure there no other applications running. Try restarting the computer and launching them again. If you still don't have enough memory, you may need to get a memory upgrade. Contact Mark of the Unicorn technical support.

You select a patch in Performer's patch list, but you don't hear the correct sound on the synth.

Cause: There could be many causes for this. One possibility is that the synth is in a mode that causes it to respond to your patch change differently than by calling up a sound. In this case, try switching into Unisyn and selecting a different module for the synth. Also, check the

MIDI channel of the device for the patch list. Is the device perhaps transmitting on a channel that the synth isn't set to receive patch changes on? Also, have you changed the patch map in the synth? If so, read "Patch Maps" on page 673.

You hear a pause during Performer's playback.

If Performer is playing back when you switch between Unisyn and Performer, you will hear a brief pause in Performer's playback. Also, if you send a bank or other data intensive operation in Unisyn while Performer is playing in the background, this can also stop playback momentarily.

You make a change to a patch in a bank in Unisyn, but the change is not reflected in Performer's patch list.

Under some circumstances, changes you make to an individual patch in the synth's current bank in Unisyn will not be immediately reflected in Performer's patch list. This includes things like changing a patch name, moving it to a different location in the bank, adding a new patch to the bank, etc. To bring Performer's patch list up to date, use the Send Bank command in Unisyn's MIDI menu, which will update Performer's patch list.

Chapter 45 *MIDI Utilities*

Interface Settings

The *Interface Settings* command in the Basics menu allows you to set the communication speed between Performer (actually FreeMIDI) and other MIDI hardware and software. Use the Interface Settings command to open the Interface Settings dialog box. This dialog box allows you to enable and disable the two serial ports for MIDI. If, for instance, you have a printer attached to the Thru port of your MTP II and the MTP II is connected to the Printer serial port, you will need to disable MIDI on the printer port in order to do any printing.

Edit FreeMIDI Configuration

The Edit FreeMIDI Configuration command in the Basics menu opens the FreeMIDI Setup program. Doing so lets you add, remove, and modify devices in your FreeMIDI setup. Use this command when you would like to make changes to the device list pop-up menus that appear throughout Performer.

FreeMIDI Sync

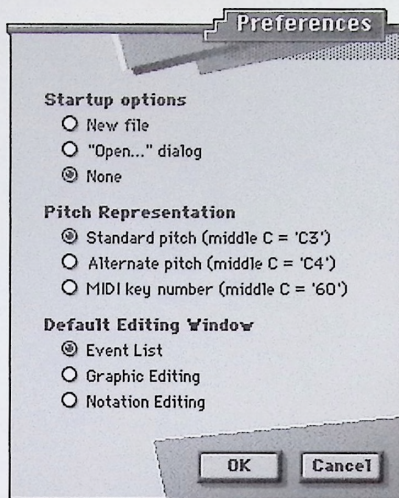
Free MIDI Sync command in the Basics menu, when checked, causes all FreeMIDI programs that are currently running to play, stop, rewind, and locate together. When you enable it in Performer, it automatically gets enabled in all other FreeMIDI programs, too. Conversely, if you enable it in any other FreeMIDI program, it gets enabled in Performer automatically. When it is checked, it is enabled; when it is unchecked, it is disabled. For complete information about this command, refer to “The Transport Controls” on page 710.

Panic

The Panic command in the Basics menu sends an *All Notes Off* MIDI message and then a *note off* MIDI message for every MIDI note on every possible MIDI channel on every MIDI output cable on both serial ports. It also resets MIDI buffers in FreeMIDI software. This command can take quite a while. If you wish to stop the operation, type command-period on your Mac keyboard.

Preferences

The Preferences command in the File menu gives you several choices for various features in Performer.



Startup options

Choose how you would like Performer to open when you first launch the application. Performer can do one of three things:

- Open a new file.
- Present you with the Open file dialog box.
- Neither of the above. In this case, no window or dialog box appears. Instead, Performer's menu bar appears at the top of the screen, and the only menu available is the File menu, from which you can choose New or Open.

Pitch Representation

Lets you choose how note octaves are numbered.

Default Editing Window

This setting determines what you get when you double-click a track. The other two windows can be opened by command-double-click and option-command-double-click.

Settings in the Preferences window are stored in the Performer Preferences file, which is automatically created in the Preferences Folder in the System Folder. They are global settings and affect all files.

Chapter 46 *Using FreeMIDI Setup*

This chapter explains all the major functions of the FreeMIDI Setup application.

FreeMIDI Setup is the application that you use to edit your FreeMIDI configuration or FreeMIDI System Preferences. It is the application that is launched or switched to when the *Edit FreeMIDI Configuration* command is chosen in FreeMIDI-compatible applications such as Performer, Mosaic, or Unisyn. In FreeMIDI Setup, you can edit the properties and connections of devices as well as the various settings in the FreeMIDI System, such as Inter-application MIDI and Monitor Patch Changes. You can view the current patch list for a device in a pop-up menu. You can control the Transport functions of a FreeMIDI sequencer, such as Performer. You can also use FreeMIDI Setup to test your studio connections.

The Current FreeMIDI Configuration

There is no need to make a FreeMIDI configuration “current”. The configuration that is visible in the FreeMIDI Configuration window is the current configuration that all FreeMIDI applications will use. Whenever you launch FreeMIDI Setup to view or edit your FreeMIDI configuration, the configuration document with which you were last working is opened automatically. If you do not launch FreeMIDI Setup, other FreeMIDI applications will be using the FreeMIDI configuration that was last opened in FreeMIDI setup.

If you open a new or existing configuration, it will immediately become the current configuration that all FreeMIDI applications will use.

See “Working with FreeMIDI Configurations” on page 703 for information on working with multiple FreeMIDI configurations.

FreeMIDI Preferences

The FreeMIDI Preferences dialog box is where you tell FreeMIDI which serial ports you will be using for MIDI, whether you want to use Inter-application MIDI, whether FreeMIDI should monitor patch changes and whether FreeMIDI should allow non-FreeMIDI

applications to use the serial ports for MIDI. See “Launching FreeMIDI Setup” on page 46 of the *Getting Started* booklet for more information on FreeMIDI Preferences.

Quick Setup

Use the *Quick Setup* command to add and delete devices from your FreeMIDI configuration. This command is especially good to use when you need to add or delete more than one device from your configuration. Quick Setup can also shorten the process of connecting devices to interfaces, since the connections can be specified before the devices appear in the FreeMIDI Configuration window and then automatically appear when the setup is completed.

Auto Config

The Quick Setup dialog box contains an *Auto Config* push button which opens the Auto Config dialog box. Auto Config can automatically find many of the MIDI devices in your MIDI studio. See “Configuring Your studio automatically” on page 51 of the *Getting Started* booklet for information on using Auto Config to configure FreeMIDI for your studio.

Using Quick Setup to Add FreeMIDI Devices

To use Quick Setup to add devices:

1. Choose *Quick Setup* from the Configuration menu.

The Quick Setup dialog box appears.

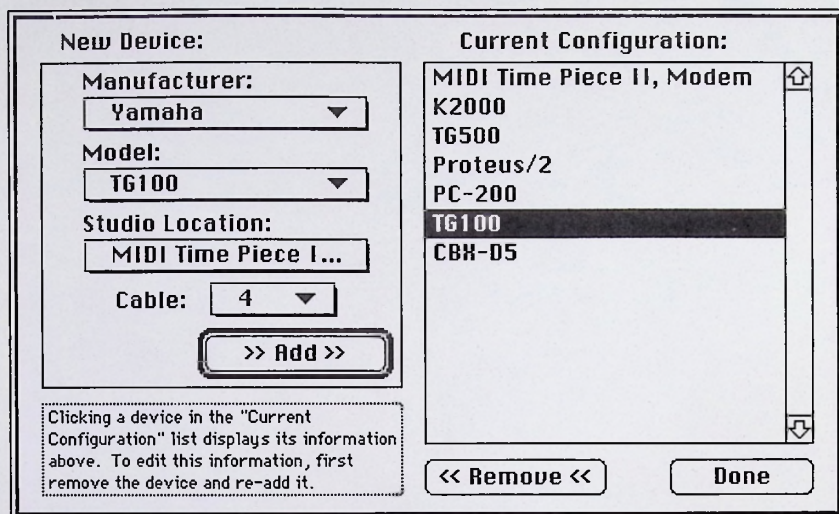


Figure 46-1: Quick Setup Dialog Box

This dialog box contains a list of all the MIDI devices that are contained in your current FreeMIDI configuration on the right side under the label *Current Configuration*.

2. Select the correct manufacturer, model, studio location and cable (if applicable) from the pop-up menus on the left and then click *Add*.

If the pop-up menus do not contain a description of a particular device, choose *Other* and click *Add*. We will see how you can re-name and re-define these devices later in this manual. For now they will be called by the default name *Device-1* for the first such device, *Device-2* for the next and so on. If you accidentally add a

device to the list that you do not want to appear in your studio configuration, select its name from the list on the left and click *Remove*.

3. When you have added all the devices to the list that you wish to add to your studio configuration, click *Done*.

The FreeMIDI Configuration window will appear containing all of the MIDI devices defined in the Quick Setup dialog box and their connections.

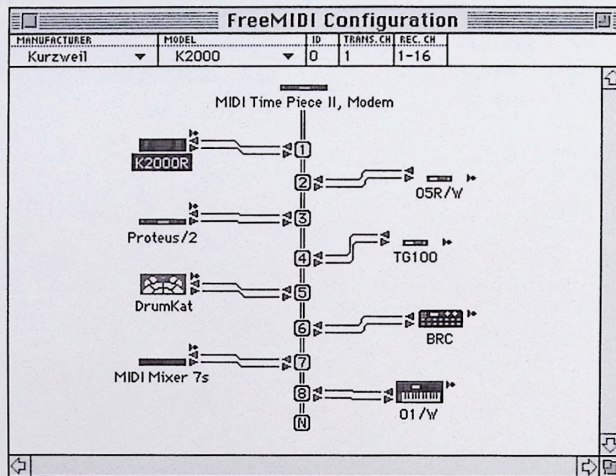


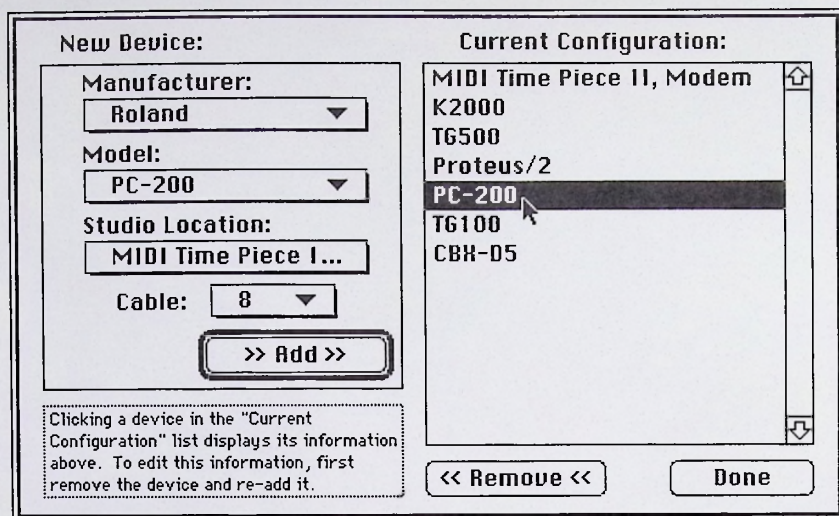
Figure 46-2: FreeMIDI Configuration Window

Using Quick Setup to Remove FreeMIDI Devices

To use Quick Setup to remove devices:

1. Choose *Quick Setup* from the Configuration menu.

The Quick Setup dialog box appears.



2. Select the device or devices you wish to remove from the *Current Configuration* list and click *Remove*.

The selected devices will disappear from the list.

3. When you have finished removing devices, click *Done* to close the Quick Setup dialog box.

The FreeMIDI Configuration window will appear containing all of the MIDI devices defined in the Quick Setup dialog box and their connections, minus the devices which were removed.

This window is where you edit your FreeMIDI Configuration. It is the window that will appear when you choose the *Edit FreeMIDI Configuration* command in other FreeMIDI applications such as Performer, Mosaic, and Unisyn.

The FreeMIDI Configuration Window

This window contains a graphical representation of your MIDI studio. It contains MIDI interfaces, FreeMIDI devices, interface-to-device connections and an Info Bar.

Use the title bar of the window to move it as with any standard Macintosh window. Use the horizontal and vertical scroll bars to view portions of the window not currently visible as with any standard Mac window. Use the Zoom button to toggle the window between full size and its current state. Use the grow handle to change the size or shape of the window.

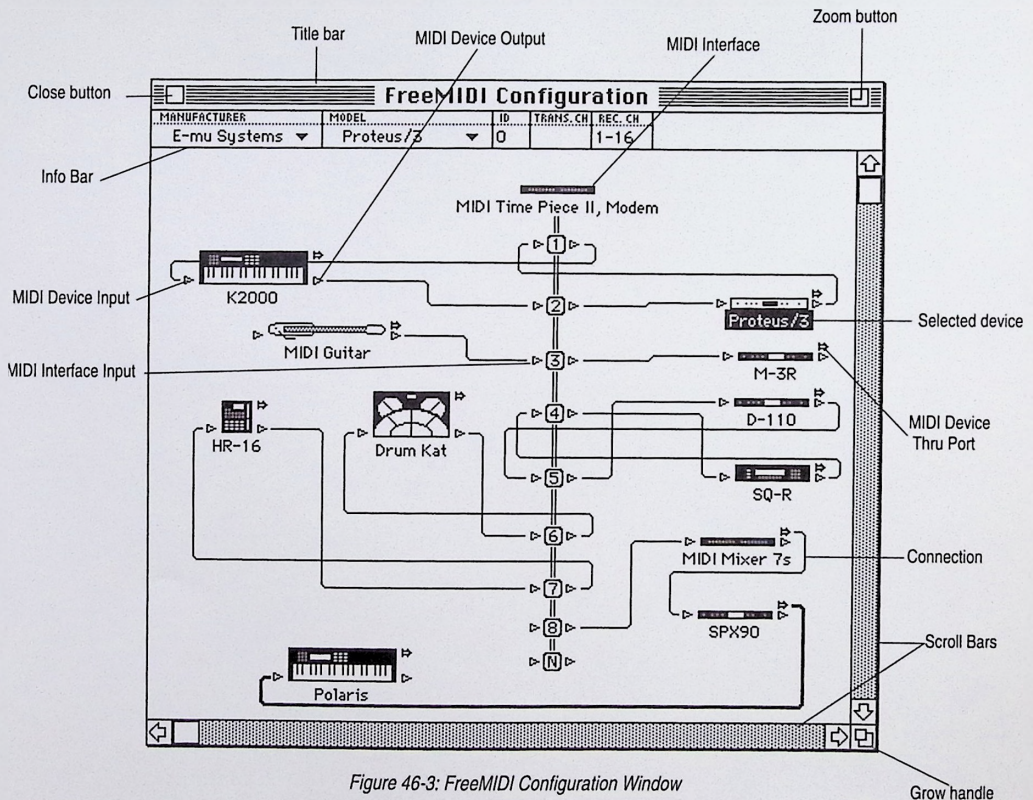


Figure 46-3: FreeMIDI Configuration Window

Editing Device Info in the FreeMIDI Configuration Window

In the FreeMIDI Configuration window, you can view, edit, and rearrange your FreeMIDI configuration in most any way that you like.

The FreeMIDI Configuration window shows your current configuration. You can make any other previously saved configuration the current configuration simply by opening it.

Use the Quick Setup command along with the Auto Config command to quickly set up a configuration that matches your MIDI studio. For more information, see “Configuring Your studio automatically” on page 51 of the *Getting Started* booklet.

You can edit some of the properties of devices that appear in your FreeMIDI configuration directly in the FreeMIDI Configuration window. The properties that you can change are the manufacturer name, model name, device ID, device name, and MIDI transmit and receive channels. See “Editing FreeMIDI Devices” on page 693 in this chapter for information on editing *all* the properties of FreeMIDI devices.

To quickly change the manufacturer, model, device ID or MIDI channel for a device:

1. Select the device you wish to edit by clicking its icon.

It's device info appears in the info bar near the top of the window.

MANUFACTURER	MODEL	ID	TRANS. CH	REC. CH
Kurzweil ▼	K2000 ▼	0	1-16	1-16

Figure 46-4: FreeMIDI Configuration window Info Bar

2. Select a new manufacturer or model name from the appropriate pop-up menus.

Unless you want to leave the model name blank, you will need to change the model name for a device if you change its manufacturer.

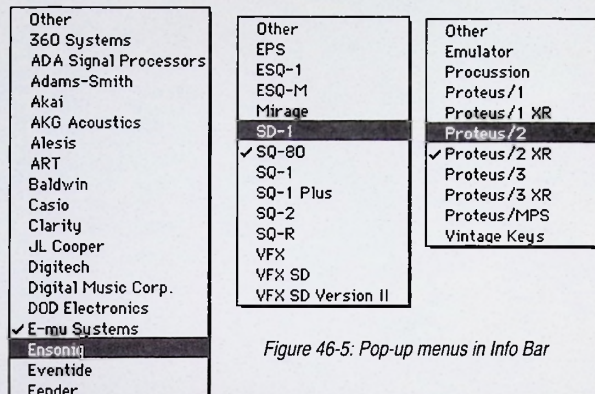


Figure 46-5: Pop-up menus in Info Bar

3. Enter new device ID or MIDI transmit and receive channels numbers in the appropriate text entry box(es).

If you would like to enter consecutive MIDI channel numbers, enter the numbers like this: 1-8. If you would like to enter non-consecutive numbers, enter the numbers like this: 1,3,5,7,10.

You can add, delete, edit, rename, duplicate, connect, disconnect, and rearrange FreeMIDI devices in the FreeMIDI Configuration window. Use the techniques below to add and remove devices from your FreeMIDI configuration if you only need to add or remove one device at a time. Otherwise, it is usually easier to use the Quick Setup command to add or remove multiple devices. See "Using Quick Setup to Add FreeMIDI Devices" on page 685 in this chapter for more information on using the Quick Setup command.

See "Working with FreeMIDI Configurations" on page 703 in this chapter for information on working with multiple FreeMIDI configurations.

Editing FreeMIDI Configurations

Adding FreeMIDI Devices

To add a single FreeMIDI device to your configuration:

1. Choose **Create Device** from the Configuration menu or type command-K on your Mac keyboard.

The FreeMIDI Device Specification dialog box appears. If you do not wish to add a device at this time, click *Cancel* and the FreeMIDI Configuration window reappears.

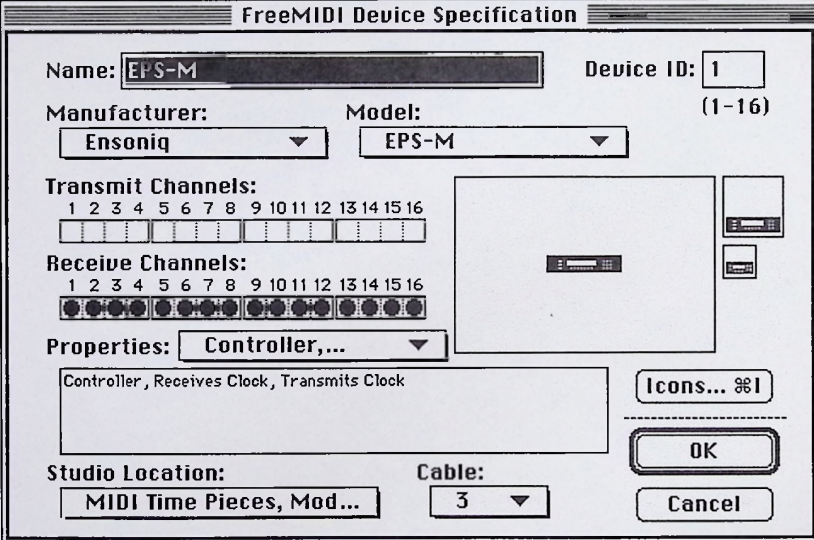
The image shows a Mac OS-style dialog box titled "FreeMIDI Device Specification". It contains several input fields and controls. At the top, there's a "Name:" field with "EPS-M" entered and a "Device ID:" field with "1" entered. Below these are "Manufacturer:" and "Model:" dropdown menus, both showing "Ensoniq" and "EPS-M" respectively. To the right of the Model dropdown is the text "(1-16)". There are two rows of channel selection: "Transmit Channels:" and "Receive Channels:", each with a row of 16 checkboxes. The "Properties:" field has a dropdown menu showing "Controller,..." and a text area below it containing "Controller , Receives Clock , Transmits Clock". To the right of the text area is a button labeled "Icons... ⌘I". At the bottom, there's a "Studio Location:" field with "MIDI Time Pieces, Mod..." and a "Cable:" dropdown menu with "3" selected. On the far right are "OK" and "Cancel" buttons.

Figure 46-6: FreeMIDI Device Specification Dialog Box

2. Select a manufacturer and model from the pop-up menus.

Steps 2-7 below are optional. FreeMIDI ships with default settings for each device in its model list. These default settings appear when you select a specific model from the model pop-up menu. If you would like to change any of the settings such as the device name, ID, properties, MIDI channels or icon, proceed to steps 2-7 below. Otherwise, click OK and the new device will appear at the top of FreeMIDI Configuration window.

3. Enter a name for the device by typing the name into the name text box.
4. Set a device ID number by entering a new number in the Device ID text box.
5. Select up to eight different Properties for the device by selecting properties from the Properties pop-up menu.

For more information, see "Device Properties" on page 716.

6. Set transmit and receive channels for the device, by clicking the appropriate box(es) below the MIDI channel numbers that are displayed.

It is very important to set the MIDI channel information correctly, since this controls the amount of channels that appear for the device in other FreeMIDI applications such as Performer.

7. Select an icon to represent the device in the FreeMIDI Configuration window.

Click *Icons* and scroll until the icon that you wish to use is displayed in the middle, bordered field and click OK. For information on entering your own icons into FreeMIDI, see chapter 49, "Editing FreeMIDI Device Files".

8. Indicate the studio location of the device by selecting the appropriate MIDI interface and cable number from the pop-up menus provided.

If you don't have a multi-port MIDI interface like the MIDI Time Piece II or MIDI Express, the cable pop-up menu will not be available.

To remove FreeMIDI devices from your configuration:

1. Select the device you wish to remove by clicking its icon. Shift-click device icons to select more than one device.
2. Type backspace or delete on your Mac keyboard or choose *Cut* or *Clear* from the Edit menu or type command-X or command-B on your Mac keyboard.

Any of these commands removes the selected devices.

Removing FreeMIDI Devices

Editing FreeMIDI Devices

3. If you remove the wrong devices, choose *Undo* from the Edit menu and try again.

Once FreeMIDI devices are defined and appear in your FreeMIDI configuration, you can change any of their properties with the FreeMIDI Device Specification dialog box.

To edit a FreeMIDI device:

1. Double-click the device you wish to edit. Alternately, select the device and choose *Edit Device* from the Configuration menu or type command-E on your Mac keyboard.

The FreeMIDI Device Specification dialog box appears. If you select more than one device in the FreeMIDI Configuration window, the *Edit Device* menu item becomes grayed-out (disabled) since you can only edit the properties of one FreeMIDI device at a time.

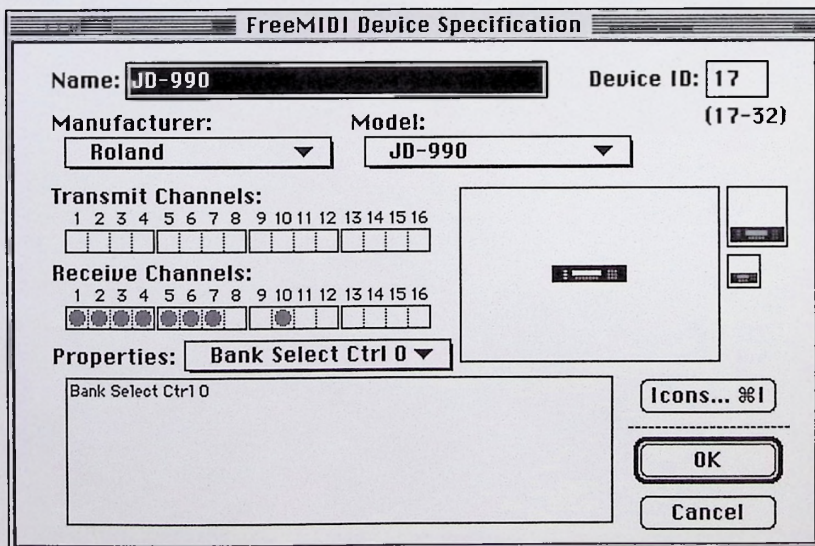


Figure 46-7: FreeMIDI Device Specification Dialog Box

Naming FreeMIDI Devices

2. Make the changes you desire and click **OK** or click **Cancel** to cancel the edit operation.

See "Adding FreeMIDI Devices" on page 691 in this chapter for information on the various properties you can edit in this dialog box.


When devices are added to your FreeMIDI configuration using Quick Setup and Auto Config, they are given default names that correspond to their model names. You can easily rename these devices if you wish. See "Editing FreeMIDI Devices" on page 693 in this chapter for information on one method of changing the name of any existing FreeMIDI device with the FreeMIDI Device Specification dialog box.

An even easier way to change a FreeMIDI device name follows:

1. Select the device by clicking its icon.

You can skip step 2 below by clicking the device's name directly. The mouse cursor will change to the text insertion I-beam to indicate that it is in text entry mode.

2. Type the **Return** or **Enter** key on your Mac keyboard.
3. Enter a new name for the device.
4. Type the **Return** or **Enter** key on your Mac keyboard to confirm your choice. Alternately, you can click any where in a blank part of the FreeMIDI Configuration window to confirm the new name.
5. If you enter the wrong name, choose **Undo Rename** from the Edit menu and try again.

 For users familiar with System 7, FreeMIDI's naming convention is identical to naming icons in the Finder.

Selecting FreeMIDI Devices

To select a FreeMIDI device in the FreeMIDI Configuration window, click its icon. To select more than one FreeMIDI device, shift-click each icon. To deselect a previously selected FreeMIDI device, shift-click its icon. To deselect all selected FreeMIDI devices, click in a blank area of the FreeMIDI Configuration window.

Duplicating FreeMIDI Devices

You can make copies of FreeMIDI devices in two ways. Using the *Copy* or *Cut* command along with the *Paste* command, you can make copies of devices to paste into other FreeMIDI configurations. Using the *Duplicate* command, you can make copies of devices in the current FreeMIDI configuration with one command.

To copy or cut and then paste devices:

1. **Select the device you wish to copy or cut by clicking its icon. Shift-click device icons to select more than one device.**
2. **Choose *Copy* or *Cut* from the Edit menu. Alternately, you can type command-C for Copy and command-X for Cut on your Mac keyboard.**

Copy makes a copy of the selected items and places it on the clipboard for pasting. *Cut* makes a copy of the selected items and places it on the clipboard for pasting and removes the original selection.

3. **(Optional) If you wish to paste the devices into a different FreeMIDI configuration, close the current configuration and open a new or existing configuration.**

For info on opening new and existing configurations see "Opening Existing FreeMIDI Configurations" on page 705 and "Creating a New FreeMIDI Configuration" on page 703 in this chapter.

4. **Choose *Paste* from the Edit menu. Alternately, you can type command-V on your Mac keyboard.**

The pasted devices will appear in some blank portion of the FreeMIDI Configuration window.

To duplicate devices:

1. **Select the device you wish to duplicate by clicking its icon. Shift-click device icons to select more than one device.**
2. **Choose *Duplicate* from the Edit menu. Alternately, you can type command-D on your Mac keyboard.**

The duplicated devices will appear in some blank portion of the FreeMIDI Configuration window.

Connecting Devices to Interfaces

Once you have added a FreeMIDI device to your FreeMIDI configuration, you need to connect its inputs and outputs to an interface in your configuration. FreeMIDI is unable to send or receive MIDI to or from the device unless it is connected to an interface. FreeMIDI does not require that the input and output cable of a device be the same number, but, in most cases, setting up your studio this way may be more organized and simpler to understand.

- Outputs are represented by small triangles that are located on the right side of devices and interface ports. Inputs are represented by small triangles that are located on the left side of devices and interface ports.

To connect a device output to an interface:

1. **Drag a “patch cord” from the output of a device to an input on an interface.**

When you release the mouse, the connection will appear. If you have a multi-cable interface such as the MTP II or MIDI Express, be sure to connect the device output to the input to which the device is physically connected. If you are using both the modem and printer serial ports, be sure to connect the device output to the input on the interface on the serial port to which the device is physically connected.

2. **Alternately, you can drag the “patch cord” from the input of an interface to an output on the device.**
3. **If you connect the wrong ports for a device, choose *Undo Drag* from the Edit menu and try again.**

To connect a device input to an interface:

1. **Drag a “patch cord” from the input of a device to an output on an interface.**

When you release the mouse the connection will appear. If you have a multi-cable interface such as the MTP II or MIDI Express, be sure to connect the device output to the input to which the device is physically connected. If you are using both the modem and printer serial ports, be sure to connect the device output to the input on the interface on the serial port to which the device is physically connected.

Making MIDI Thru Connections

Making Multiple MIDI Input Connections

Connecting Devices to other Devices

Removing Device Connections

2. Alternately, you can drag the "patch cord" from the output of an interface to an input on the device.
3. If you connect the wrong ports for a device, choose *Undo Drag* from the Edit menu and try again.

When more than one MIDI device shares a single output port from a MIDI interface, you need to connect the MIDI Thru port of the device to the input of the other device. This mirrors the physical connection that you should have between the devices.

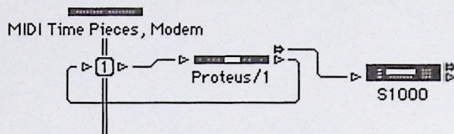


Figure 46-8: MIDI Thru Connection

FreeMIDI Setup allows you to connect more than one MIDI output from a device to a single MIDI input on an interface. When you make such a connection, you are telling FreeMIDI that both devices' MIDI outputs are connected to a single MIDI input on an interface. Without some type of MIDI merger, this type of connection is not possible.

FreeMIDI Setup allows one connection per port (input output, or thru) on each device. You cannot connect devices to each other except from MIDI Thru to MIDI In of a separate device. If you would like to make such connections, use the Cable Routing (on MIDI Time Piece and MIDI Express interfaces) or similar features in your MIDI interface or MIDI patch bay/merger gear.

Once you have made connections between devices and interfaces, you can remove the connections to make different connections if you physically change the connections in your MIDI studio.

To remove FreeMIDI device connections:

1. Click at the intersection of the Device port and the patch cord and drag the connection away from the device and then release the mouse.

The connection is broken.

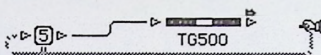


Figure 46-9: Breaking a Connection

An alternate way to remove FreeMIDI device connections follows:

1. Select a connection by clicking it. Shift-click connections to make multiple selections simultaneously.

When a connection is selected, it appears as a thicker, heavier line. To deselect a connection, click somewhere in a blank area of the FreeMIDI Configuration window.

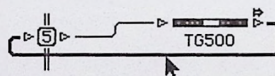


Figure 46-10: Selecting a Connection

2. Type backspace or delete on your Mac keyboard or choose *Cut* or *Copy* from the Edit menu or type command-X or command-B on your Mac keyboard.

Any of these commands will remove the selected connections.

3. If you remove the wrong connections, choose *Undo* from the Edit menu and try again.

Arranging the FreeMIDI Configuration window

You can arrange the FreeMIDI Configuration window any way you like. We suggest that you drag device icons so that they appear as they do in your studio. For instance, you can arrange all the modules, which are in a rack to the left of your Mac, to the left side of the window and all the modules, which are in a rack to the right of your Mac, to the right side of the window. You can drag the patch cords, which connect the devices to the interfaces, up or down so that you can view the connections clearly. You can drag MIDI ports in a multi-

The Clean Up Window Command

Updating Interfaces

cable interface, such as the MTP, MTP II or MIDI Express, up or down to create more or less space between them. You can delete input or output cables, which are not part of your studio setup, by clicking the patch cord to select it and typing the backspace or delete key on your Mac keyboard. You can also make and break connections by just dragging the ends of the patch cords. You can use the different options in the Views menu to change the size of the icons and to view input and outputs separately or together.

You can use the Clean Up Window command in the Views menu to quickly arrange all the devices in the window into uniform columns.

Interfaces are an important part of the FreeMIDI Configuration. They appear automatically when FreeMIDI scans the serial ports for MIDI interfaces. This happens the first time you set the FreeMIDI System Preferences to access one or both serial ports for MIDI. You can use the Update Interfaces command in the Configuration menu to have FreeMIDI check for MIDI interfaces that you may have installed or powered on after originally setting the Preferences file.

To do so:

1. Choose Update Interfaces from the Configuration menu

The Update Interfaces dialog box appears.

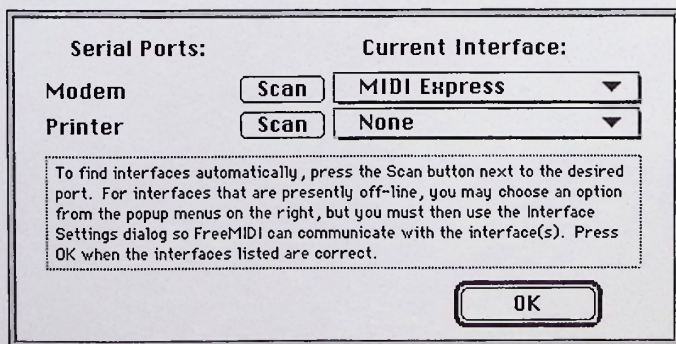


Figure 46-12: Update Interfaces dialog box

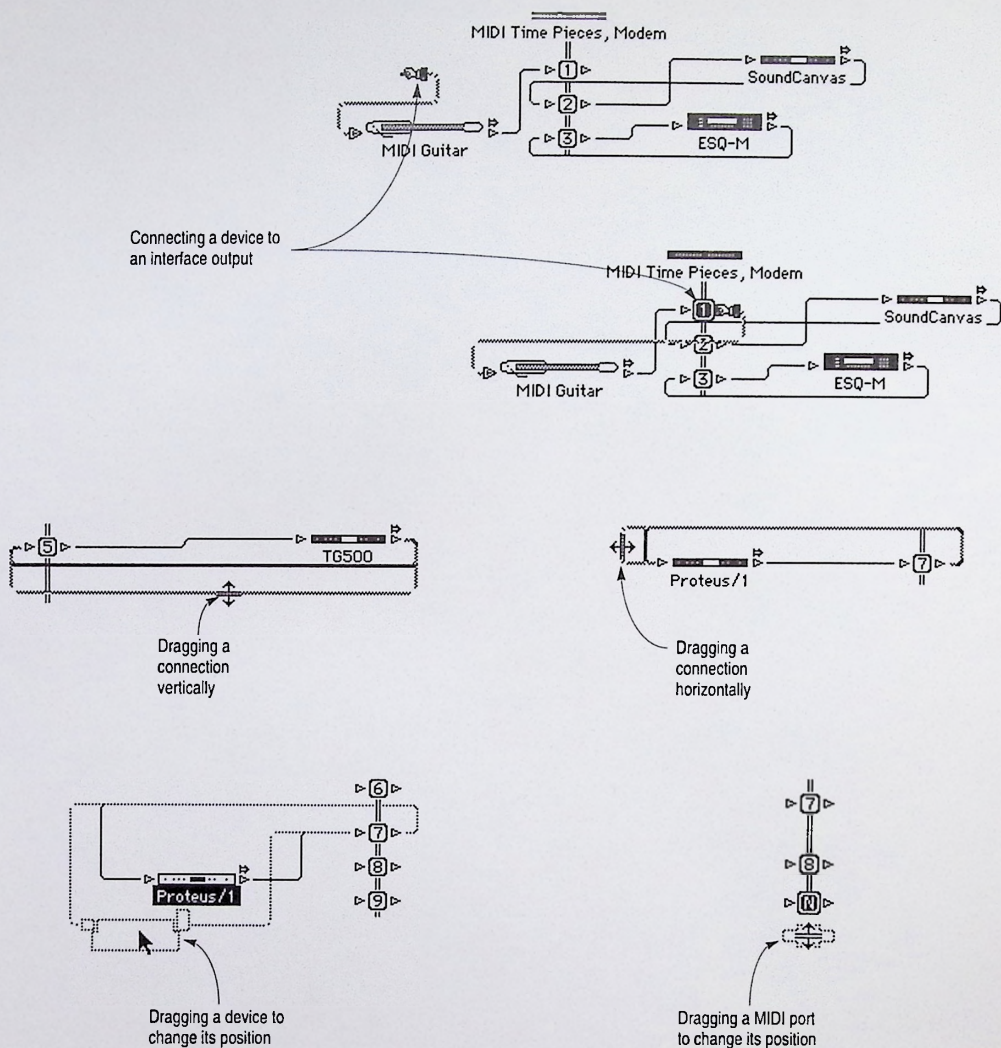


Figure 46-11: Arranging FreeMIDI devices and connections

Adding Interfaces

2. Click the Scan button for the Serial port(s) you wish FreeMIDI to search for interfaces and click OK.

Interfaces that FreeMIDI finds appear in the FreeMIDI Configuration window.

You can use the Update Interfaces command in the Configuration menu to add MIDI interfaces that may currently be off-line (powered off or disconnected) to the current FreeMIDI configuration.

To do so:

1. Choose Update Interfaces from the Configuration menu.

The Update Interfaces dialog box appears. See Figure 46-2 above.

2. Sselect the interface you require from the pop-up menus and click OK.

The interfaces are added to your FreeMIDI configuration.

3. Choose Interface Settings from the MIDI menu.

This step is essential to ensure that FreeMIDI can communicate with the newly-added interface(s). The Interface Settings dialog box appears.

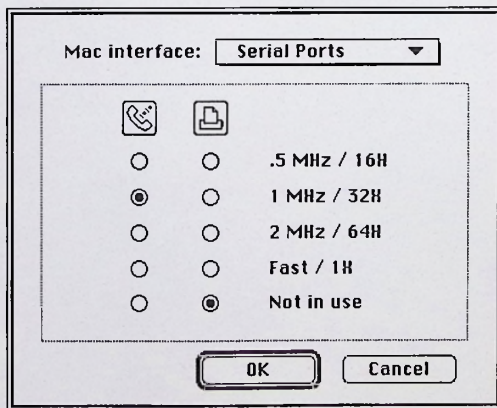


Figure 46-13: Interface Settings dialog box

Moving FreeMIDI Interfaces

4. Select the appropriate settings for the interface(s) you have added and click OK.

To move a FreeMIDI interface, drag its icon to the desired position. Choose *Undo Drag* command from the Edit menu to return the device icon to its original position.

You can drag the input/output ports of a MIDI interface up and down to make more room between each port by dragging the port number icon that you wish to move. Choose *Undo Drag* command from the Edit menu to return the port number icon to its original position.



Figure 46-14: Moving interface ports vertically

Editing FreeMIDI Interface Names

After a FreeMIDI interface appears in the FreeMIDI Configuration window, you can change its name. To do so:

1. Select the FreeMIDI interface you wish to edit by clicking its icon.

Its info appears in the info bar. If you clicked the interface icon's name, the mouse cursor changes to a text insertion I-beam and you can enter a new name by just typing. If you did not click the icon name, you can still edit the name by typing the *Return* key on your Mac keyboard and the name will pop-up for editing and the mouse cursor changes to a text insertion I-beam when it is over the icon name. If you are familiar with System 7, this naming convention works identically to the Finder in System 7.

Working with FreeMIDI Configurations

Creating a New FreeMIDI Configuration

We call the documents created by the FreeMIDI Setup application “FreeMIDI configurations”. When FreeMIDI Setup is open, the FreeMIDI Setup document that is currently open and whose FreeMIDI configuration is visible in the FreeMIDI Configuration window is the current configuration that all FreeMIDI applications use. Whenever you launch FreeMIDI Setup to view or edit your FreeMIDI configuration, the configuration document with which you were last working is opened automatically. If you do not launch FreeMIDI Setup, other FreeMIDI applications use the FreeMIDI configuration that was last opened in FreeMIDI Setup.

If you open a new or existing configuration, it will immediately become the current configuration that all FreeMIDI applications use.

Although only one FreeMIDI configuration can be current or active at a time, you can create as many FreeMIDI configurations as you like. Once you have created a FreeMIDI configuration for your own MIDI studio, you might want to create a FreeMIDI configuration for another studio that you might be working at in the future or you might want to create several variations of your home studio for different situations.

To create a new FreeMIDI configuration:

1. **If you have not done so already, open FreeMIDI Setup by double-clicking its icon in the Finder. Alternately, you can open FreeMIDI setup by choosing the *Edit FreeMIDI Configuration* command in any other FreeMIDI application.**

The FreeMIDI Configuration window opens and displays the current FreeMIDI configuration.

2. **Choose *New* from the File menu or type command-N on your Mac keyboard.**

If you have made changes to the current configuration and have not yet saved them, FreeMIDI Setup will ask if you would like to save these changes before the new configuration opens.

3. **The Update Interfaces dialog box appears.**

This dialog is shown in Figure 46-12 on page 699.

4. If you have an interface connected, click Scan on the port it is connected to.
5. If you don't have an interface connected at the moment, choose an interface from the pop-up menu and click OK.

You now see a new window with the interface you just found (or chose by hand).

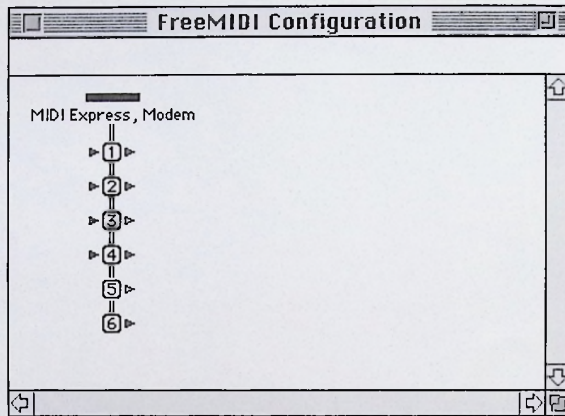


Figure 46-15: New FreeMIDI Configuration

6. Use Quick Setup or Auto Config to add and connect devices to the interface in this new FreeMIDI configuration. Alternately, you can add devices to the configuration individually by choosing *Create Device* from the Configuration menu.

For more information on adding and connecting devices in this new FreeMIDI configuration, see "Quick Setup" on page 684, "Auto Config" on page 684, and "Editing FreeMIDI Configurations" on page 690 in this chapter.

Opening Existing FreeMIDI Configurations

You now have a FreeMIDI configuration that can be used in the studio for which it was designed. See "Saving FreeMIDI Configurations" on page 705 for information on how to save this configuration to disk so that you can open it when you start work in the studio for which it was designed.

Once you have saved more than one FreeMIDI configuration to disk, you can open any existing configuration for use in a situation such as starting a project in another MIDI studio.

To open an existing configuration:

1. **If you have not done so already, open FreeMIDI Setup by double-clicking its icon in the Finder. Alternately, you can open FreeMIDI setup by choosing the *Edit FreeMIDI Configuration* command in any other FreeMIDI application.**

The FreeMIDI Configuration window opens and displays the current FreeMIDI configuration.

2. **Choose *Open* from the File menu. Alternately, you can type command-O on your Mac keyboard.**

If you have made changes to the current configuration and have not yet saved them, FreeMIDI asks if you would like to save these changes before another configuration opens. Otherwise, a standard Macintosh File Open dialog box opens.

3. **Select the FreeMIDI configuration that you would like to open and click *Open* or click *Cancel* to leave the current FreeMIDI configuration open.**

The selected configuration opens and you can proceed to use this configuration in your other FreeMIDI applications. Use the directory pop-up menu to navigate to a disk and folder in which the configuration you wish to open is located. See your Macintosh owner's manual for more information on saving files and navigating to disk and folders.

Saving FreeMIDI Configurations

You can save each FreeMIDI configuration that you create to disk so that you can recall them at a later date.

Popup Patch Lists

To save a FreeMIDI configuration:

1. **Choose Save from the File menu. Alternately, you can type command-S on your Mac keyboard.**

If the configuration has been saved before, it replaces the current version of the configuration. If there are no changes since the last time the configuration was saved, the Save menu item is disabled (grayed-out) in the File menu. If the configuration has never been saved before, a standard Macintosh File Save dialog box opens.

2. **Use the suggested name “FreeMIDI Configuration” or enter another name for your configuration if you like, and click *Save* or click *Cancel* to cancel the operation.**

Use the directory pop-up menu to navigate to a disk and folder in which you wish to save this configuration. If you like, you can use the New Folder button to create a new folder in which to save this configuration and others that you might create in the future. See your Macintosh owner's manual for more information on saving files and navigating to disk and folders.

The configuration is now safely saved and you can recall it at a later date.

Librarian applications, such as Unisyn or PatchList Manager, which support FreeMIDI's patch lists, can be used to define patch lists for your FreeMIDI devices. You can view the patch lists assigned to FreeMIDI devices and send patch changes to their default channels directly in the FreeMIDI Setup application. For more information on how to define patch lists for a FreeMIDI device, consult your Librarian software's users manual. If you use the PatchList Manager, this information is in chapter 48, “Using PatchList Manager”.

To view and send patch changes in the FreeMIDI Setup application:

1. **Check to be sure that the Popup Patchlists menu item in the MIDI menu is enabled.**

The Popup Patchlists command should have a check next to its name. If it does not, choose it to select it.

2. Press the mouse on a device in the FreeMIDI Configuration window and its current patch list appears in pop-up menu.

Figure 46-2 below shows a portion of an Ensoniq ESQ-M popup patch list.

001 STEIN	033 WIND1
002 WAY	034 BOYS 1
003 QUIPNO	035 QUANT2
004 RHODES	036 AIRTO2
005 PICT	037 VAINVS
006 PNOST1	038 LIFLIN
007 PNOST2	039 KRAFTY
008 HARPSI	040 QUANTA
009 PNOST3	041 CUST 1

Figure 46-16: Popup Patchlist

3. (Optional) If you want to send a patch change command to the device whose patch list you are viewing, choose the patch you want to send and release the mouse.

The patch change will be sent to the device on its default channel.

Patch Thru

Audition Channels

The PatchThru command lets you send MIDI data from one FreeMIDI device to any selected FreeMIDI device while FreeMIDI Setup is the current application.

Before using PatchThru, be sure to set the Audition Channels the way you need them.

To do so:

1. Choose **Audition Channels** from the MIDI menu.

The Audition Channels dialog box appears.

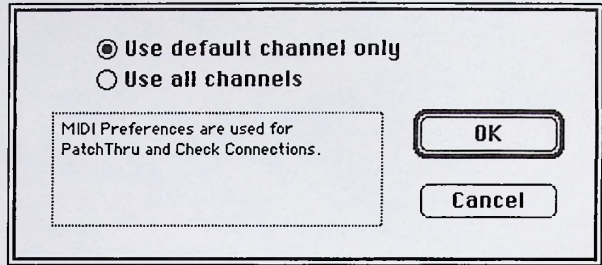


Figure 46-17: Audition Channels Dialog Box

2. Select one of the two options available.

The *Use default channel only* option is the default setting. With this setting PatchThru sends all incoming MIDI data to the selected device on the first available MIDI receive channel for that device. The *Use all channels* option will cause PatchThru to send all incoming MIDI data to the selected device on all of the selected device's MIDI receive channels at once. This option is mostly useful for detecting to which channels a device is currently responding.

3. Click **OK** to confirm your choice or **Cancel** to leave the Audition Channels settings unchanged.

Using PatchThru

PatchThru is a checkable menu item. This means that its state (on or off) is toggled each time you choose it from the menu. When there is a check next to the PatchThru menu item in the MIDI menu, PatchThru is enabled.

MidiLocate

To use PatchThru:

1. **Check to be sure that the PatchThru menu item in the MIDI menu is enabled.**

The PatchThru command should have a check next to its name. If it does not, choose it to select it. You can also use the Mac keyboard shortcut to toggle the state of PatchThru by typing command-T.

2. **Select a device and play notes on your MIDI controller keyboard.**

You should hear the notes being played coming from the device that is selected.

- ☛ You can only patch thru to one device at a time. To Patch Thru to more than one device, use Multi-record mode in Performer or cable routing in the MTP, MTP II or MIDI Express.

MidiLocate is a unique feature designed to make adding devices to your FreeMIDI configuration easier. In this mode, FreeMIDI automatically determines the proper input cable to which a device is physically attached and then displays this connection in the FreeMIDI Configuration window.

MidiLocate is a checkable menu item. This means that its state (on or off) is toggled each time you choose it from the menu. When there is a check next to the MidiLocate menu item in the MIDI menu, MidiLocate is enabled.

To use MidiLocate:

1. **Select a FreeMIDI device in the FreeMIDI Configuration window.**
2. **Check to be sure that MidiLocate menu item in the MIDI menu is enabled.**

The MidiLocate command should have a check next to its name. If it does not, choose it to select it. You can also use the Mac keyboard shortcut to toggle the state of MidiLocate by typing command-L.

The Transport Controls

3. Play some MIDI data from the MIDI device.

FreeMIDI will determine from where the MIDI data is coming and redraw the FreeMIDI Configuration window to indicate the appropriate connection.

Here is an example of MidiLocate in action. Let's say you have a Kurzweil K2000 that is connected to some MIDI input on your MTP II, but you are not sure which input:

1. Add a K2000 FreeMIDI device your configuration using **Quick Setup or Create Device**.
2. Enable MidiLocate.
3. Select the K2000 device.
4. Play some notes on its keyboard or send some other MIDI data from it and the K2000 device automatically is connected to the correct MIDI input port on your MTP II in the FreeMIDI Configuration window.

The Transport Controls window contains buttons that can control the transport functions (Play, Stop, Rewind, Locate) of other FreeMIDI applications from within FreeMIDI Setup. For instance, you might want to start a sequence playing in Performer while you are working on some aspect of your FreeMIDI setup. You do so by opening the Transport Controls window, enabling FreeMIDI Sync, and clicking Play. With this feature, there is no need to switch to Performer.

- Playing MIDI in the background using the transport controls only functions when FreeMIDI Preference's Software Compatibility is set to allow *FreeMIDI applications only*. For more information, see "Launching FreeMIDI Setup" on page 46.

Once FreeMIDI Sync is enabled you can also stop Performer, rewind the sequence, or locate to up to 8 predefined positions within the sequence directly from FreeMIDI Setup.

FreeMIDI Sync can be enabled from any FreeMIDI application that is currently open and that supports this feature of FreeMIDI. In Performer, this command is in the Basics menu. When you enable FreeMIDI Sync in any open FreeMIDI application, it is enabled for all FreeMIDI applications on that Macintosh.

- ☛ The state of FreeMIDI Sync (ON or OFF) cannot be changed while a FreeMIDI application such as Performer is playing.

To use the Transport Controls:

1. Choose **Transport Controls** from the MIDI Menu or type command- = on your Mac keyboard.

The Transport Controls window appears.

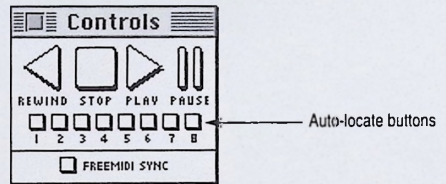


Figure 46-18: Transport Controls Window

2. Click **FreeMIDI Sync** to enable FreeMIDI Sync.

You can skip this step if FreeMIDI Sync has already been enabled by some other FreeMIDI application. If it is already enabled, the FreeMIDI sync check box appears checked.

3. Click the **Transport Control** function that you want to use.

Click Rewind, Play, Stop, or Pause to send those commands to the FreeMIDI application that you are controlling. The FreeMIDI application should respond to these commands as if you were using its own controls.

The Panic Command

Check Connections

Checking MIDI Output

4. If the FreeMIDI application that you are controlling supports their use, you can use any of the 8 auto-locate buttons to auto-locate to some pre-defined location in the sequence or song that is currently playing.

In Performer, you can define these auto-locate points in the Markers window. Assign a number from 1-8 for a marker in the Seek column and that marker's location in the sequence will be defined as one of the 8 FreeMIDI auto-locate points. Click the corresponding button in the Transport Controls window and Performer will locate to that point. You can auto-locate at any time, even during playback.

The Panic command found in the MIDI menu sends an *All Notes Off* MIDI message and then a *note off* MIDI message for every MIDI note on every possible MIDI channel on every MIDI output cable on both serial ports. It also resets MIDI software buffers in FreeMIDI software.

This command can take quite a while. If you wish to stop the operation, type command-period on your Mac keyboard.

The Check Connections command is a utility that FreeMIDI Setup provides for troubleshooting and testing the connections of your MIDI studio.

Check Connections is a checkable menu item. This means that its state (on or off) is toggled each time you choose it from the menu. When there is a check next to the Check Connections menu item in the MIDI menu, Check Connections mode is enabled.

To use Check Connections mode to check MIDI output connections:

1. **Check to be sure that the Check Connections menu item in the MIDI menu is enabled.**

The Check Connections command should have a check next its name. If it does not, choose it to select it. When the menu item is checked, Check Connections mode is enabled and the mouse

cursor will change to the Check Connections cursor when it is within the FreeMIDI Configuration window as shown in Figure 46-2 below.



Figure 46-19: Check Connections mouse cursor

2. Press a device icon and hold the mouse button down.

While you hold the mouse button down, FreeMIDI sends a C major chord on all MIDI channels to the MIDI output port to which the selected device is connected. If you have an MTP, MTP II, MIDI Express or other interface which can show MIDI output activity, the LED should light up on the selected output port. Additionally, the device to which you are playing MIDI should play the C major chord. If you do not see MIDI activity or do not hear the C major chord, check the connections, cables and power switches of all your MIDI gear.

3. Press other device icons to test the rest of your studio.

4. Uncheck the Check Connections menu item in the MIDI menu by selecting it.

Checking MIDI Input

To use Check Connections mode to check MIDI input connections:

1. Check to be sure that Check Connections menu item in the MIDI menu is enabled.

The Check Connections command should have a check next its name. If it does not, choose it to select it. When the menu item is checked, Check Connections mode is enabled and the mouse cursor will change to the Check Connections cursor when it is within the FreeMIDI Configuration window as shown in Figure 46-2 above.

2. Send MIDI data from one of your MIDI devices.

If the device has a keyboard, play notes on it. If it is a rack-mount unit, you will need to find a way to send some type of MIDI data from it. Try changing patches or initiating a system exclusive dump from its front panel.

3. The MIDI port to which the device is connected should flash the eighth note icon as shown below in Figure 46-2.



Figure 46-20: Incoming MIDI Data indicator

If no ports flash, this means that FreeMIDI is not receiving the MIDI data. Check the connections, cables and power switches of all your MIDI gear. If a port flashes, but it is not the port you expected, you will need to re-connect the MIDI device to the correct port or better yet, change the connection in your FreeMIDI configuration to match the physical connection. See “MidiLocate” on page 709. for a quick and easy way to re-connect a device in your FreeMIDI configuration.

The View Menu

The View menu allows you to change the way the FreeMIDI Configuration window displays. The Clean Up Window command automatically aligns devices in straight columns. For more information, see “The Clean Up Window Command” on page 699.

There are three size options, which control the display of FreeMIDI device icons and four input/output options, which control the display of the “patch cords” that connect devices and interfaces, as illustrated in Figure 46-2 below.

The two upper sections in this menu each have mutually exclusive options. Choosing one of the icon size options disables the other two icon size options. Similarly, choosing one of the input/output view options disables the other three input/output view options.

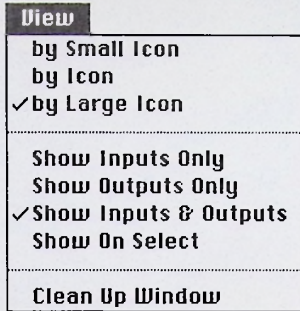


Figure 46-21: The View Menu

To use the View menu to change the display of your FreeMIDI configuration:

1. **Choose an icon size option from the View menu and the FreeMIDI Configuration window will redraw (if necessary) to display your choice.**

The choices are Small Icon, Icon, and Large Icon. These three choices represent the three icon sizes possible for each FreeMIDI device. See "Editing FreeMIDI Devices" on page 693, for information on changing the icons of your FreeMIDI devices. These options are useful for displaying more or less of your FreeMIDI Configuration, depending on what you are doing at the time.

2. **Choose an input/output view option from the View menu and the FreeMIDI Configuration window will redraw (if necessary) to display your choice.**

These choices are useful for making the FreeMIDI configuration window display easier to read.

Changing Interface Settings

Normally, FreeMIDI finds out what your interface settings are automatically. In this case, you should never need to change the interface settings.

There are, however, a few situations in which you might need to make the interface settings manually, such as the following cases:

- You have an interface that FreeMIDI does not automatically recognize
- You have just changed the communication speed on your interface (for example, you've changed it from FAST/1X speed to 1 MHz).

There are other possible situations as well. In these cases, you can set the interface speed manually using the Interface Settings command in the MIDI menu.

To changing the interface settings:

1. Choose Interface Settings from the MIDI menu.

The Interface settings dialog box appears. See Figure 46-2 above.

2. Select the appropriate options and click OK.

Device properties are descriptive words that can be assigned to any FreeMIDI device. FreeMIDI applications can use these device properties in any way that they require. Here are two examples of the use of device properties:

- A FreeMIDI application which knows about the General MIDI specification could check FreeMIDI devices for the General MIDI device property. If the application found this property assigned to a certain device, it could then adjust itself to display and send the General MIDI patch changes only to this device, without having to know anything else about the device (such as the device model name or patch list).

Device Properties

- A FreeMIDI application that needs to synchronize its timing to a certain device could check for the Transmits Sync device property. If the property existed, the application would know that it could successfully sync to the device.

You can assign device properties to a device when the device is first added to your FreeMIDI configuration or at a later time. The FreeMIDI Device Specification dialog box is where this assignment is made. See "Editing FreeMIDI Devices" on page 693 and "Adding FreeMIDI Devices" on page 691, for information on assigning device properties to devices.

Chapter 47 ***Quick Reference for FreeMIDI Setup***

This chapter contains brief descriptions of all the commands and dialog boxes contained in the FreeMIDI Setup application. Use this chapter as a reference guide for finding out how a certain feature is used. Read the chapters that are cross-referenced for more detailed information on these features.

The Apple Menu

The Apple menu contains Desk Accessories under system 6 and what ever is in the Apple Menu Items folder under system 7. The first command in the Apple Menu is About FreeMIDI Setup.

About FreeMIDI Setup

Choose *About FreeMIDI Setup* to display the FreeMIDI Setup startup screen and version number. Click the mouse anywhere to make this display go away and return to the FreeMIDI Configuration window.

The File Menu

The File menu contains all the commands that allow you to open, close, and save FreeMIDI configuration files.

New

Use the New command to close the current configuration and open a new empty configuration. You will be asked if you are sure that you want to close the current configuration, since this will affect all FreeMIDI applications that are currently being used. Before the new configuration is created, the Update Interfaces dialog appears so that FreeMIDI can establish what type of MIDI interface you have.

Open

Use the Open to close the current configuration and open a previously defined configuration.

Close

Use the Close command to Quit FreeMIDI Setup.

Save

Use the Save command to save changes you have made to the current configuration file on disk.

Save As

Use the Save As command to save the current configuration file with a new name.

To save the current configuration file with new name:

To save the current configuration file with new name:

1. Choose *Save As* from the File menu.

The Save As dialog box appears.

2. Enter a new name for the configuration file.

You can't use a colon (:) in the name; however all other characters are permitted, including spaces. Navigate to the disk and folder to which you wish to save the configuration file using the directory menu at the top of the window. If you enter a name that is already in use, a dialog box asks you to confirm your choice.

3. Click Save.

Your configuration file is saved on the disk in its current state under the new name.

Revert

Use the Revert command to discard any changes you have made to the current configuration file and restore it to the state it was in when you last saved it.

Page Setup

Use the Page Setup command to control the way your configuration is printed when using the Print command. See your Macintosh user's manual for more information on Page Setup.

Print

Use the Print command to print a picture of your FreeMIDI configuration. See your Macintosh and printer user's manual for more information on printing.

FreeMIDI Preferences

Use the FreeMIDI Preferences command to open the FreeMIDI Preferences dialog box. This dialog is where you control some of the global settings of FreeMIDI such as which serial ports FreeMIDI will use, whether Inter-application MIDI is enabled, whether non-FreeMIDI applications will have access to the serial ports and whether patch change monitoring is enabled.

Quit

Use the Quit command to exit the FreeMIDI Setup application.

The Edit Menu

Undo

The Edit menu contains commands for copying and pasting FreeMIDI devices in the FreeMIDI Configuration window. These commands also work in the standard Mac way anywhere in FreeMIDI Setup where you edit text.

Use the Undo command to undo the last edit or change that you made to your FreeMIDI Configuration. Generally, this command displays the command that it will Undo, such as Undo Drag or Undo MidiLocate. As a shortcut, type command-Z on your Mac keyboard to invoke this command.

Cut

Use the Cut command to place a copy of the current selection on the Clipboard and then remove the current selection. As a shortcut, type command-X on your Mac keyboard to invoke this command.

Copy

Use the Copy command to place a copy of the current selection on the Clipboard. As a shortcut, type command-C on your Mac keyboard to invoke this command.

Paste

Use the Paste command to insert whatever data is currently on the Clipboard. As a shortcut, type command-V on your Mac keyboard to invoke this command.

Clear

Use the Clear command to remove the current selection. No copies are placed on the Clipboard. As a shortcut, type command-B on your Mac keyboard to invoke this command.

Duplicate

Use the Duplicate command to make copies of the currently selected FreeMIDI devices. This command only works on selected FreeMIDI devices, so it is grayed-out(disabled) unless at least one FreeMIDI device is selected. As a shortcut, type command-D on your Mac keyboard to invoke this command.

Select All

Use the Select All command to quickly select all of the current type of data. For instance, if there is no selection in the FreeMIDI Configuration window, Select All selects all the FreeMIDI devices, interfaces, and connections in the window. If a text entry box is active, such as the name field for a FreeMIDI device, Select All will select all the text in the name field. As a shortcut, type command-A on your Mac keyboard to invoke this command.

The Configuration Menu

Quick Setup

The Configuration menu provides access to various commands for setting up and changing your FreeMIDI configuration.

Use *Quick Setup* to open the Quick Setup dialog box, which allows you to quickly add and remove devices to and from your current FreeMIDI configuration. For more information, see "Quick Setup" on page 684.

Update Interfaces

Use *Update Interfaces...* to inform FreeMIDI of changes you have made to the MIDI interface(s) that you have connected to the serial port(s) on the Macintosh. For more information, see "Updating Interfaces" on page 699.

Create Device

Use *Create Device* to open the FreeMIDI Device Specification dialog box and add a new FreeMIDI device to your current FreeMIDI configuration. For more information, see "Adding FreeMIDI Devices" on page 691.

Edit Device

Use *Edit Device* to open the FreeMIDI Device Specification dialog box and edit an existing FreeMIDI device in your current FreeMIDI configuration. You must select a device before this command becomes enabled. With no devices selected, it remains grayed-out (disabled). For more information, see "Editing FreeMIDI Devices" on page 693.

The MIDI Menu

Interface Settings

The MIDI Menu contains commands which provide control over FreeMIDI Setup's various MIDI settings.

Use the Interface Settings command to open the Interface Settings dialog box. This dialog box allows you to enable and disable the two serial ports for MIDI. If, for instance, you have a printer attached to the Thru port of your MTP II and the MTP II is connected to the Printer serial port, you will need to disable MIDI on the printer port in order to do any printing.

Return

Use the Return command to return to the FreeMIDI application that was last active before switching to FreeMIDI Setup. This command will only have an effect if you switch to FreeMIDI Setup with the Edit

Transport Controls

FreeMIDI Configuration command from any other FreeMIDI application. As a shortcut, type command-R on your Mac keyboard to invoke this command.

Use the *Transport Controls* command to open the Transport Controls window. The Transport Controls window contains buttons that can control the transport functions (Play, Stop, Rewind, Locate) of other FreeMIDI applications from within FreeMIDI Setup. For more information, see “The Transport Controls” on page 710.

Check Connections

This command, when checked, causes the arrow cursor to change to a small keyboard cursor.



When you click a device in the FreeMIDI configuration window with the keyboard cursor, FreeMIDI sends a C-major chord to the device via MIDI. If all is well, the device plays the chord. If there is a communication problem between FreeMIDI and the device (such as a loose cable or something), the device does not play the chord.

Conversely, when this command is checked, and you send MIDI from one of your MIDI devices to FreeMIDI, the port to which the device is connected flashes a note symbol to indicate that FreeMIDI is successfully receiving data from the device.

This command serves as a diagnostic tool for you to determine if MIDI communication is OK.

MidiLocate

Use the MidiLocate command to toggle the state of MidiLocate. When the menu item is checked, MidiLocate is enabled. When it is unchecked, MidiLocate is disabled. For more information, see “MidiLocate” on page 709.

PatchThru

Use the PatchThru command to toggle the state of PatchThru. When the menu item is checked, PatchThru is enabled. When it is unchecked, PatchThru is disabled. For more information, see “Patch Thru” on page 707.

Popup Patchlists

This command, when checked, causes the arrow cursor to change to a MIDI patch change icon cursor.



When you then press on a device in the MIDI configuration window with the patch change cursor, a popup patch list appears containing a list of the patches for the device. For more information, see “Popup Patch Lists” on page 706.

Audition Channels

The *Audition Channels* command allows you to choose how PatchThru and Check Connections will function. For more information, see “Audition Channels” on page 707.

Panic

Use the *Panic* command to send an “All Notes Off” MIDI message and then a “note off” MIDI message for every MIDI note on every possible MIDI channel on every MIDI output cable on both serial ports. This command will also reset all MIDI buffers in all FreeMIDI software. This command can take quite a while. If you wish to stop the operation, type command-period, on your Mac keyboard. For more information, see “The Panic Command” on page 712.

The View Menu

The View menu controls the display of the FreeMIDI Configuration window. The three options at the top of the menu, *by Small Icon*, *by Icon* and *by Large Icon*, are mutually exclusive. Choosing one option disables the other two. When an option is chosen from the menu, it gets a check mark next to its menu item.

The next four options, *Show Inputs only*, *Show Outputs only*, *Show Inputs and Outputs*, and *Show On Select*, are also mutually exclusive. For more information, see “The View Menu” on page 714.

Use the *Clean Up Window* command to quickly arrange all the FreeMIDI devices in the window in a neat column. For more information, see “The Clean Up Window Command” on page 699.

Chapter 48 Using PatchList Manager

What is PatchList Manager?

This chapter explains how to use PatchList Manager, a FreeMIDI-compatible application included with Performer. You can find it in the FreeMIDI Applications folder on the top level of your hard disk (unless you have moved it since installation).

PatchList Manager helps you create and maintain accurate patch lists for your MIDI instruments, so that the sound names in Performer match the sounds in the instrument. In fact, the word *patch* refers to a specific sound in your MIDI instrument.

0 SoloCells	32 Epibase	64 BellEnsemble	96 RoomDrums
1 CelVlna	33 WindStack	65 Cybcrspace	97 MagicBells
2 SoloVlna	34 FrenchHorn1	66 PlzHooBass	98 Reguclron
3 Quartet	35 FrenchHorn2	67 Hornbala	99 SoloHr
4 SoloChamber	36 SectionHorns	68 GrndRaper	100 Psychotron
5 ArcoBasses	37 Trumpet1	69 TskrBell	101 CloudChamber
6 ArcoCells	38 Trumpet2	70 Carusel	102 Squelcher
7 ArcoVlnas	39 TwoTrumpets	71 ExcelsHarp	103 LurchPick
8 ArcoVlna2	40 Horns&Tuba	72 DnSndSaxers	104 PizzPiccolo
9 Maracas	41 Trombone1	73 EronePnd	105 Vampscral
10 Maracas2	42 Trombone2	74 Vntrphone	106 StrngTngs
11 LegtDr	43 Tuba	75 AstralTute	107 Galapagos
12 Concerto	44 BackErass	76 KntBass	108 SquareOne
13 PizzBasses	45 ChamberErass	77 SmbreVnds	109 SquareLink
14 PizzCells	46 BrassStrngs	78 SpaceCowboy	110 ***
15 PizzVlnas	47 Tmpani	79 TheMachine	111 Sordolous
16 PizzVlna2	48 Oong/Cymbal	80 EarlyPerc	112 MaslerTron
17 PizzVlna2	49 Bass/Drum	81 Genlyfrow	113 LeVndolst
18 PizzVlna2	50 TmpltDrum	82 Piccolodwaga	114 Sngpntatic
19 TrmStrngs	51 Xylophone	83 InfntiOne	115 VndChimes
20 Strgs/Tules	52 Clockenspiel	84 ShmmerVajs	116 Eoathaus
21 WstrgPd	53 Glocka	85 TurbBass	117 DlttrGod
22 Overlmento	54 TubularBells	86 Requiem	118 StoryBass
23 Flute	55 Percussion1	87 VrcngRoom	119 Nicelght
24 Piccolo	56 Percussion2	88 AnlogPd	120 Proppellr
25 Flute	57 Harp	89 ChapeDrum	121 Proppellr
26 EnglishHorn	58 Harpstrngs	90 Electrcocal	122 WhlttJude
27 Clarinet	59 Harp&Kord	91 FatBoyTuba	123 Lvk2Shmmer
28 BassClarinet	60 Strngs&Wind	92 Strngs&Wind	124 Arcngng
29 Bassoon	61 VlntrSigns	93 VlntrDream	125 Mrgsonallo
30 Contrabassoon	62 DeepPd	94 VntrgPd	126 Phardr
31 ChamberVnds	63 Portamento	95 TskusTwh	127 Cnslon

Patch 1	Patch 33	Patch 65	Patch 97
Patch 2	Patch 34	Patch 66	Patch 98
Patch 3	Patch 35	Patch 67	Patch 99
Patch 4	Patch 36	Patch 68	Patch 100
Patch 5	Patch 37	Patch 69	Patch 101
Patch 6	Patch 38	Patch 70	Patch 102
Patch 7	Patch 39	Patch 71	Patch 103
Patch 8	Patch 40	Patch 72	Patch 104
Patch 9	Patch 41	Patch 73	Patch 105
Patch 10	Patch 42	Patch 74	Patch 106
Patch 11	Patch 43	Patch 75	Patch 107
Patch 12	Patch 44	Patch 76	Patch 108
Patch 13	Patch 45	Patch 77	Patch 109
Patch 14	Patch 46	Patch 78	Patch 110
Patch 15	Patch 47	Patch 79	Patch 111
Patch 16	Patch 48	Patch 80	Patch 112
Patch 17	Patch 49	Patch 81	Patch 113
Patch 18	Patch 50	Patch 82	Patch 114
Patch 19	Patch 51	Patch 83	Patch 115
Patch 20	Patch 52	Patch 84	Patch 116
Patch 21	Patch 53	Patch 85	Patch 117
Patch 22	Patch 54	Patch 86	Patch 118
Patch 23	Patch 55	Patch 87	Patch 119
Patch 24	Patch 56	Patch 88	Patch 120
Patch 25	Patch 57	Patch 89	Patch 121
Patch 26	Patch 58	Patch 90	Patch 122
Patch 27	Patch 59	Patch 91	Patch 123
Patch 28	Patch 60	Patch 92	Patch 124
Patch 29	Patch 61	Patch 93	Patch 125
Patch 30	Patch 62	Patch 94	Patch 126
Patch 31	Patch 63	Patch 95	Patch 127
Patch 32	Patch 64	Patch 96	Patch 128

Figure 48-1: For many popular MIDI devices, Performer automatically displays sound names in its pop-up patch lists. If not, you'll see generic names as shown on the right. PatchList Manager lets you replace generic names with the actual names in the synth. In addition, it provides a host of capabilities that allow you to maintain accurate patch Lists for all of your MIDI devices.

Do you need to use PatchList Manager?

Situations that call for PatchList Manager

A brief overview of PatchList Manager

FreeMIDI automatically provides factory default patch lists for over 70 popular synthesizers and sound modules. If your device is one of them, the patch lists you see in Performer's *Patch* and *Default Patch* pop-up menus will be accurate and complete, and you probably won't need to use PatchList Manager. To check the accuracy of a device's patch List in Performer, choose a sound from a track's *Default Patch* pop-up menu in the Tracks window and then see if the track plays with the sound you chose. If so, you are all set.

Here are the most common situations in which you would need to use PatchList Manager:

- Performer is displaying generic sound names for one of your devices as shown in Figure 48-1 on page 725 (i.e. "Patch 1, Patch 2, Patch 3" etc.) and you want to see actual sound names instead.
- The current sound names in Performer don't match the sounds you hear in the instrument.
- You want to make minor changes to a patch List, such as changing the order of the sounds in the list.
- You have loaded a new bank of sounds into the instrument (or have otherwise changed the internal state of the instrument) and you want to access them by name in Performer.
- You want to set up, reorganize, add, or remove multiple patch Lists for an instrument that has multiple banks of sounds.

PatchList Manager has the three main windows shown in Figure 48-2. The FreeMIDI Devices window shows the MIDI device or devices that you want to work with. The Patch List window shows all of the patch lists that can be assigned to the devices. The Programs window displays the list of sounds contained in a particular patch list.

The information shown in these three windows is saved in your FreeMIDI Setup document, as well as a separate PatchList Manager document, which you'll save to disk when you have finished working with PatchList Manager.

The mini-menu contains commands that apply to the window.

The **FreeMIDI Devices** window shows the MIDI instruments you would like to work with, along with the MIDI channels belonging to each device. Use the **Choose Devices** command in the mini-menu to decide which devices you want to see in this list.

The **Close** button closes the window.

The **Expand** button shows and hides the MIDI channels for the device.

Drag the **Move handles** to reorder the channels. You can also drag patch lists and sounds this way.

DEVICES	CHANNELS	FX	PATCHES	CURRENT PATCH	COMMENT
K2000R					
TS-12					
XS					
Morpheus					
Channel 1	1	Morpheus banks		Hph. Whisper	
Channel 2	2	Morpheus banks			
Channel 3	3	Morpheus banks		Cmp. HotJazz	
Channel 4	4	Morpheus banks			
Channel 5	5	Morpheus banks		Cmp. ElecPho	
Channel 6	6	Morpheus banks			
Channel 7	7	Morpheus banks		Sfx. Drumble	
Channel 8	8	Morpheus banks			
Channel 9	9	Morpheus banks			
Channel 10	10	Morpheus banks			
Channel 11	11	Morpheus banks			
Channel 12	12	Morpheus banks			
Channel 13	13	Morpheus banks			
Channel 14	14	Morpheus banks			
Channel 15	15	Morpheus banks			
Channel 16	16	Morpheus banks			

In the **Patch List** column, you choose which patch list (or patch list folder) to display in Performer for each MIDI channel of the device. In this example, the patch list folder called *Morpheus Banks* is assigned to all Morpheus channels. As a shortcut to assign all channels at once, click in this column next to the device name instead of one of its channels.

The **Patch Lists** window shows patch Lists, which can be grouped into folders. To place a patch List in a folder, drag its diamond move handle and drag it on top of the folder icon. Use the **Add Folder** command to create a new one.

The **Programs** window gives you access to the sound names in the patch list. Use the mini-menu commands to arrange the list and set the numbering scheme.

NAME	LENGTH	ENTER	DELETE	COMMENT
Morpheus banks				
RAM Presets	128	0/	0/	✓
ROM Presets	128	0/	1/	✓
HyperPresets	128	0/	2/	✓
Card Presets	128	0/	3/	✓
Card HyperPresets	128	0/	4/	✓
K2000 banks				
Bank 0	100	0		✓
Bank 1	100	1		✓
Bank 2	100	2		✓
Bank 3	100	3		✓
Bank 4	100	4		✓
Bank 5	100	5		✓
Bank 6	100	6		✓
Bank 7	100	7		✓
Bank 8	100	8		✓
Bank 9	100	9		✓
XS banks				
Programs	100	0/	0/	✓
Combinations	100	0/	0/	✓
GM Sounds	128	56/	0/	✓
GM Drum Kits	64	62/	0/	✓

Double-click the **move handle** to open the Programs window.

NAME	NAME
0	Sunrise
1	Piano 16
2	AltoBreath
3	TinyDancer
4	Spruce Gtr
5	Vibra Bell
6	XFade Bass
7	TheStrings
8	PowerSynth
9	TotalKit
10	MachineAge
11	Hot Keys
12	Brass Band
13	Maxi Time
14	Power Rock
15	Tabla Talk
16	FingerBass
17	LifeVoices
18	Color Pad
19	Festival
20	GlideSweep
21	LEST Tampo
22	MagiFlute
23	Operators
24	E.Guitars
25	Gamelan
26	Zap Bass
27	DigitalAir
28	Analogist
29	HandoTrem
30	Space Vng
31	Gospel Org
32	Trumpets

Click the sound name to **rename it**.

Click the **patch number** to change it.

Figure 48-2: PatchList Manager's main windows

Opening PatchList Manager

To open PatchList Manager, double-click the PatchList Manager icon on your hard disk. It is located in the FreeMIDI Applications folder on the top level of your hard disk (unless you have moved it since installation). What you'll see at first is the Choose Devices dialog box as shown in Figure 48-3 on page 728.

Choosing the devices you want to work with

The first thing you need to do is choose the device or devices you need to work with. Only choose the devices whose patchlists you need to edit. Remember, if their patch lists are already fine, you don't need to do anything with them in PatchList Manager.

1. Select each device you would like to work with by highlighting its name; deselect devices you don't need to work with.
2. If Performer's pop-up menus already display sound names for the device, and you would like to work with this default list of names in PatchList Manager, choose the list by its manufacturer and device name in the "PatchList template" pop-up menu to the right of the device.

Click the devices shown here to select or deselect them. If a device's lists are showing up in Performer and selecting the correct sounds, there is no need to select it here.

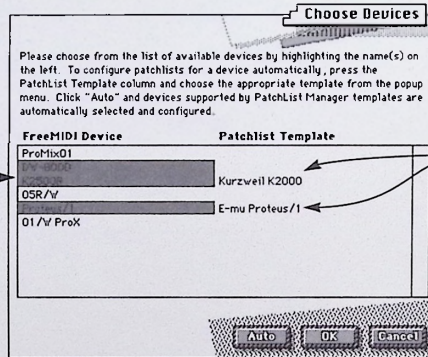


Figure 48-3: Choosing the devices you want to work with

If you want to work with FreeMIDI's default patch List(s) for a device in PatchList Manager, choose the list by name here. Note that some devices aren't supported and therefore will not have a default list, as shown in this example by the Korg DW-8000.

Under the hood: what happens when you choose a sound by name?

The sounds in a patch list are the sounds that are evoked when a MIDI program change message (sometimes called a patch change) is sent to the device. MIDI patch change events are numbered from 0 to 127 (or 1 to 128), so patch Lists will commonly have 128 sounds in them, although you'll frequently encounter other sizes.

Some MIDI devices have more than 128 sounds. In this case, the instrument either organizes them into multiple banks of sounds (usually ranging in size from 50 to 128 each), or it allows you to "map" sounds higher than 128 to a program change number below 128, replacing the original sound that used that number.

If an instrument has multiple banks, a separate patch list is set up for each bank. In this case, the term *patch list* is pretty much synonymous with the word *bank*.

If a device has multiple banks, it often requires an additional message, called a *bank select* message. To call up a sound from the bank in this case, Performer sends several MIDI messages: a bank select message (usually controller #0 and/or controller #32) followed by a patch change message. Some devices use a different type of MIDI message for bank select, such as a short system exclusive message. FreeMIDI can handle any type of bank select message. To learn more, see "Using multiple patch lists & bank select messages" on page 747.

- The devices appear in the FreeMIDI Devices window with their MIDI channels shown below them.

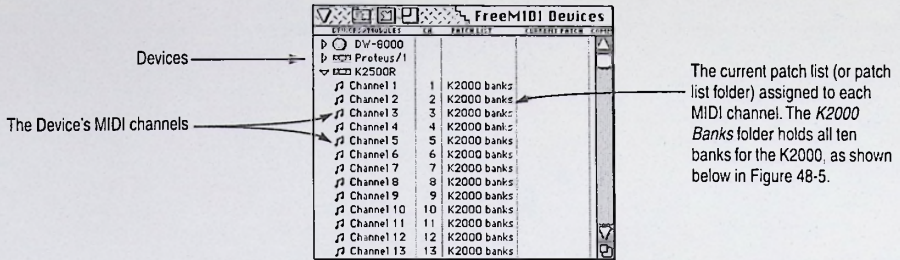


Figure 48-4: A device in the FreeMIDI Devices window

- If you imported FreeMIDI's default patch lists along with the devices, they appear in the Patch Lists window.

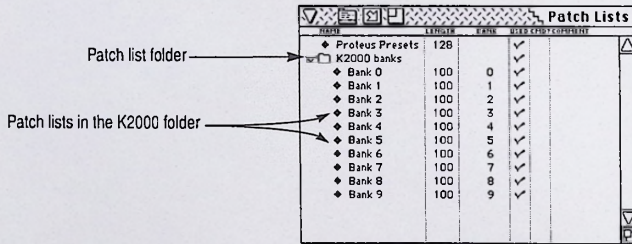


Figure 48-5: Imported FreeMIDI patch lists appear in the Patch Lists window.

Deciding what to do next

What you do next depends on what the situation is with each MIDI device. Here is a summary:

Situation	What to do
Performer is displaying generic sound names for one of your devices as shown in Figure 48-1 on page 725 (i.e. "Patch 1, Patch 2, Patch 3" etc.) and you want to see actual sound names instead.	See "Creating a new patch list" on page 731.
Most or all of the current sound names in Performer don't match the sounds you hear in the instrument.	See "Creating a new patch list" on page 731.
You have loaded a new bank of sounds into the instrument (or have otherwise changed the internal state of the instrument) and you want to access them by name in Performer.	See "Creating a new patch list" on page 731.
You want to set up, reorganize, add, or remove multiple patch lists for an instrument that has multiple banks of sounds.	"Using multiple patch lists & bank select messages" on page 747.
You want to make minor changes to a patch list, such as changing the order of the sounds in the list or renaming a few sounds.	See "Making changes to a patch list" on page 741

Creating a new patch list

If your MIDI instrument doesn't have a patch list yet, or if the current patch list is inaccurate for some reason (i.e. more than just a few sound names are incorrect), your next step is to create a new patch list for the device. There are several ways to do so. They are summarized below in the order in which you should try them.

Ways to create a patch list	Explanation	Where to go
Load the Device's patch list (or lists) from old Performer or Digital Performer files	If you already have patch lists for the device in a Performer 4.2 (or earlier) or Digital Performer 1.4 (or earlier) file, you can import the list(s) into PatchList Manager. Regular Performer files <i>and</i> configuration files can be read by PatchList Manager.	"Importing patch lists" on page 732
If PatchList Manager supports the device, it can get a "patch dump" from the device to automatically extract accurate patch lists from it	PatchList Manager gets a system exclusive bulk dump from the device, extracts the patch names, & generates a patch list for each bank.	"Using PatchList Manager to load patch names" on page 733
If PatchList Manager doesn't support the device, you can use Unisyn, Mark of the Unicorn's universal editor/librarian software, to extract an accurate patch list for each bank in the device	Get banks using Unisyn and then import the Unisyn-generated patch list for the bank into PatchList Manager.	"Getting patch lists with Unisyn" on page 736
If none of the above methods apply, you can type in the patch names by hand	You add a new, generic patch list and type the names in by hand.	"Creating a patch list by hand" on page 738

What is a "system exclusive bulk dump"?

The phrase *system exclusive* refers to a certain kind of MIDI message. Without getting too technical, system exclusive messages are used to communicate information that is unique to a specific MIDI instrument or device. System exclusive messages have a special format that allows them to hold a varying amount of information. They can be so small that they are transmitted in a fraction of a second; they can be so large that they take minutes to transmit.

The term *bulk dump* is used to refer to system exclusive messages containing large amounts of information. Often, a bulk dump represents the complete internal state of a MIDI device. In other words, the bulk dump serves as a "snapshot" of the current state of the instrument. PatchList Manager usually deals with bulk dumps that consist of one bank of sounds. For some devices, it gets the entire internal state. Either way, you'll probably wait at least a few seconds for the transmission to be completed.

Importing patch lists

You can import patch lists from Performer 4.2 (or earlier) or Digital Performer 1.4 (or earlier) files. You can import the patch lists from either complete sequence files *or* configuration files. You can also import them from other PatchList Manager files you may have saved on disk.

To import patch lists from a Performer or Digital Performer file:

- 1. Choose Import Patch Lists from the File menu.**

A standard Mac open file dialog appears.

- 2. Select the Performer or Digital Performer file that contains the patch list you wish to import and click Open.**

Use the directory menu as needed to navigate on your hard disk in order to find the file. You can select either configuration or complete sequence files.

- 3. If the Patch Lists window isn't already open, choose it from the Windows menu to view the imported list(s).**

- 4. (Optional) If several of the imported lists belong to the same MIDI device, create a folder in the Patch Lists window and place them in the folder.**

See "Grouping patch lists in a folder" on page 744. If the MIDI device supports some form of bank select, you will want to set up the bank select message for each list so that you can effortlessly choose sounds from any bank. See "Using multiple patch lists & bank select messages" on page 747.

- 5. To make the imported lists appear in Performer, assign them to their appropriate device in the PatchList Manager Devices window.**

See "Getting patch lists to appear in Performer" on page 740.

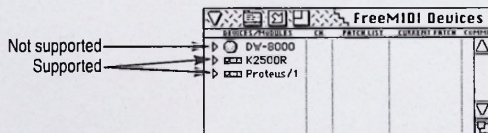
Using PatchList Manager to load patch names

For some MIDI devices, PatchList Manager can get a *system exclusive bulk dump* — also called a *patch dump* — from the instrument to extract an accurate patch list (or lists). (See the side-bar on page 731 for an explanation of this term.) The most common situation in which you would want to do this is when you have changed the sounds or banks in the instrument (so that it is no longer in its factory default state), and you would like the patch lists in Performer to reflect those changes.

For example, if you have an E-mu Proteus, and you have changed the patch map in order to access sounds above 128, you can use PatchList Manager to get a new patch list with names that match the current patch map. As another example, you may have loaded a new bank of sounds into your Korg M1 and you would like the new bank to appear as a patch list in Performer instead of the factory bank.

Determining if PatchList Manager supports your device

PatchList Manager can only get patch dumps from devices that it specifically supports. To see if your device is supported, look at its icon in the Devices window as shown below:



If your device is not supported, chances are good that you can use Unisyn, Mark of the Unicorn's universal editor/librarian software, instead. Unisyn currently supports 212 MIDI devices (with more on the way). See "Getting patch lists with Unisyn" on page 736. If you don't have Unisyn (yet), your only recourse at this point is to type in the patch names by hand. See "Creating a patch list by hand" on page 738.

Getting device help

If your device is supported by PatchList Manager, check its Device Help window for important information about how to use PatchList Manager with the device. This window often contains information about settings that you need to enable/disable in the MIDI device to successfully get a patch dump from it. It may also contain other important and relevant information about the device.

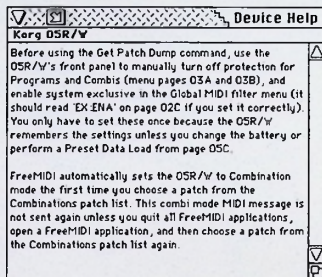
Make sure the device has both its MIDI IN and MIDI OUT connected

Getting a patch dump from a device

To check Device Help:

1. Click the device in the FreeMIDI Devices window to select it.
2. Choose *Device Help* from the Devices menu.

The Device Help window appears. This is the Device Help window for the Ensoniq ESQ-M:

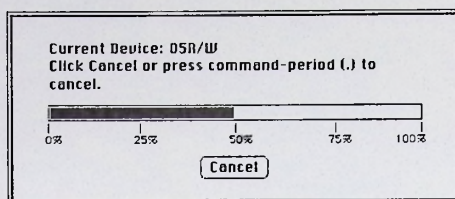


Before you go further, make sure that the device has both its MIDI IN and MIDI OUT connected to your MIDI interface. Otherwise, PatchList Manager won't be able to get the patch dump successfully. If you add a connection at this time, use the Edit FreeMIDI Configuration command in the MIDI menu to make sure both connections are present in your FreeMIDI configuration.

Once you have checked device help and MIDI cable connections, you are ready to get a patch dump from the device. By doing so, PatchList Manager will automatically extract a patch list for each bank in the device. To get a patch dump:

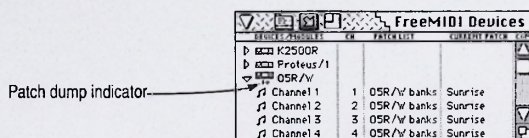
1. Click the device in the FreeMIDI Devices window to select it.
2. Choose *Get Patch Dump* from the Devices menu.
3. The Patch Dump progress dialog appears while PatchList Manager receives the patch dump.

☛ Depending on the format of the MIDI device's sysex data dump, this progress bar may fill up slowly or all at once when the dump is complete.



Two things happen when the patch dump is complete:

- The factory default patch list is updated, and the updated lists will automatically appear in Performer.
- The device's move handle icon changes slightly to indicate that it contains a sysex data dump.



Sending the dump back after editing it

For most instruments, PatchList Manager will allow you to edit the patch lists (change names of sounds, etc.) and then send the bulk dump back to the instrument to update the device itself. See "Sending a patch list back to a configured device after editing it" on page 743.

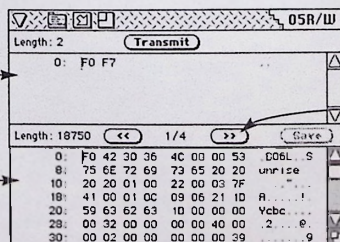
Editing the bulk dump in its raw hex form

If you enjoy doing such things, PatchList Manager lets you view and edit bulk dump in its raw hexadecimal form. To do so:

1. Click the device in the FreeMIDI Devices window to select it.
2. Choose *Edit patch dump* from the Devices menu.

Use this section to transmit any sysex message you want to the device.

Edit the hex data directly here.



If the bulk dump consists of several separate sysex messages, use these buttons to scroll through them.

Getting patch lists with Unisyn

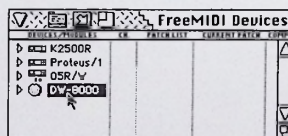
If you have a synthesizer or sound module that is not supported by PatchList Manager, Unisyn can save you the trouble of typing in the patch lists by hand. Unisyn is Mark of the Unicorn's Universal Editor/Librarian software. Unisyn supports 212 MIDI devices (more are on the way) with complete library and editing functions. If PatchList Manager doesn't support one of your MIDI devices, chances are that Unisyn does. Contact Mark of the Unicorn to see if your device is supported.

Unisyn specializes in getting banks from synths. When it gets a bank, it automatically publishes the patch list for the bank to all FreeMIDI-compatible programs. If you want to work further with it in PatchList Manager, you can load this Unisyn-generated patch list into PatchList Manager as follows:

1. Get the bank from the device using Unisyn's Get Bank command.

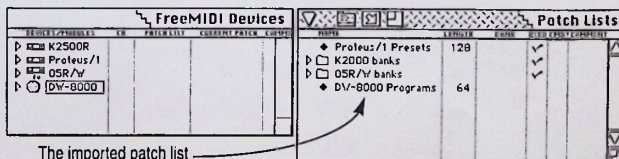
Consult the Unisyn manual if you need help with this step. As soon as Unisyn gets (or sends) a bank, it "publishes" a patch list for the current bank to all FreeMIDI programs. In some cases, you may need to transfer the bank into RAM before getting it. Consult Unisyn's profile help for the device.

2. Back in PatchList Manager, select the device by clicking its name in the FreeMIDI Devices window.



3. Choose Load FreeMIDI Patch Lists from the Devices menu.

The Unisyn-generated patch list is added to the bottom of the list in the Patch Lists window. Some devices produce several lists.



4. **(Optional) Rename the newly loaded patch list(s) by clicking its name in the Patch Lists window.**

This step is especially recommended if you are loading multiple lists for a single device because it helps you better identify each bank.

5. **(Optional) If Unisyn produced several separate patch lists for the device (one for each bank), create a folder in the Patch Lists window and place them in the folder.**

See "Grouping patch lists in a folder" on page 744. If the MIDI device supports some form of bank select, you will want to set up the bank select message for each list so that you can effortlessly choose sounds from any bank. See "Using multiple patch lists & bank select messages" on page 747.

6. **To make the imported list (or newly created folder) appear in Performer, assign it to the appropriate device in the PatchList Manager Devices window.**

See "Getting patch lists to appear in Performer" on page 740.

7. **If the device has other banks that you want to import, repeat this procedure for each bank.**

For example, Unisyn may be able to import data card banks for the device. In this case, you can import a patch list for each data card. In fact, you can import as many banks as you want into PatchList Manager and then place them together in a folder so that you have all the names at your fingertips in Performer. If you do, however, you'll need to keep track of which banks are actually loaded into the instrument at any given moment.

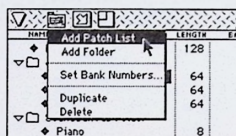
Creating a patch list by hand

If none of the methods discussed in the previous sections for creating a patch list apply to you, you can create a new patch list manually and type in the patch names by hand.

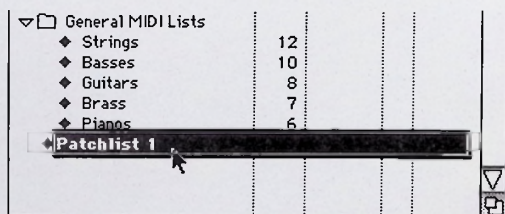
To create a new patch list:

1. Choose Add Patch List from the Patch Lists menu.

A new patch list appears at the bottom of the list. It is named "PatchList 1".

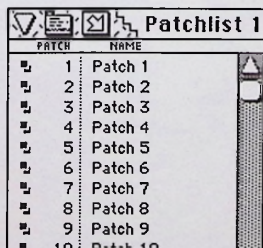


2. Click its name and enter an appropriately descriptive name for the patch list.



3. Double-click the new patch list's move handle icon to open its patch list window.

The sound names window appears. Alternately, you can choose the patch list's name from the Windows menu to open its window.

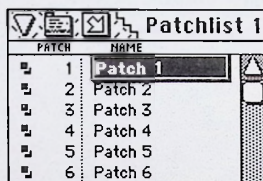


4. Choose *Set Numbering Format* from the patch list window mini-menu to set the numbering of the patch list.

See “Setting the numbering format for a patch list” on page 743 for more information.

5. Click the first patch name in the list, “Patch 1” and type in a new name.
6. Press the Return key on your Mac keyboard to confirm the edit, or press the Enter key to move to the next name in the list.

Similarly, you can move up and down between patch names with the up and down arrow keys.



7. If you'd like to list the names alphabetically, choose *Sort by name* from the mini-menu.
8. (Optional) If you are creating several separate patch lists for the device (one for each bank), create a folder in the Patch Lists window and place them in the folder.

See “Grouping patch lists in a folder” on page 744. If the MIDI device supports some form of bank select, you will want to set up the bank select message for each list so that you can effortlessly choose sounds from any bank. See “Using multiple patch lists & bank select messages” on page 747.

9. To make the new list (or folder) appear in Performer, assign it to the appropriate device in the PatchList Manager Devices window.

See “Getting patch lists to appear in Performer” on page 740.

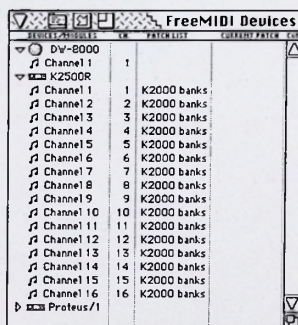
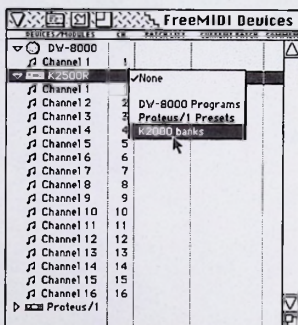
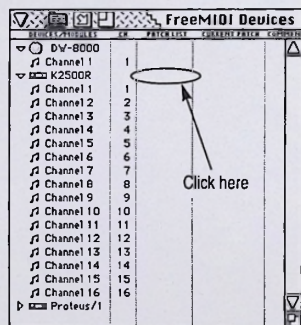
Getting patch lists to appear in Performer

To make a patch list or patch list folder show up in Performer's pop-up menus, you need to assign it to the device in PatchList Manager's Devices window. You can assign the patch list to all of the device's MIDI channels, or you can assign it to individual channels. You can even assign different lists to different channels. For example, you might assign a drum kit list to channel 10 and a list of all other sounds to channels 1-9 and 11-16.

To assign a patch list or patch list folder to all of a device's MIDI channels at once:

1. In the FreeMIDI Devices window, press in the Patch List column to the right of the device name.

A pop-up menu of patch lists appears.



2. Choose the desired patch list.

To assign a patch list to an individual MIDI channel:

1. If the MIDI channels for a device are hidden, click the Expand button to display them.



2. Press in the Patch List column next to the MIDI channel and choose the desired list from the pop-up menu.

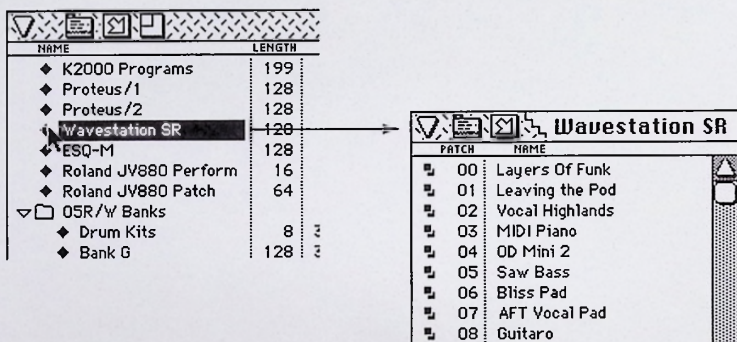
Making changes to a patch list

Opening up a patch list

In a patch list, you can:

- Edit the names of the sounds
- Change their order in the list by dragging them up and down
- Sort them by numerically or alphabetically
- Change the numbering scheme
- Change the patch change number for any sound

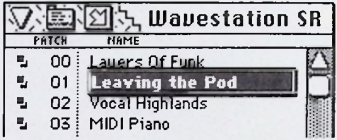
To open a patch list, double-click the patch list's name or move handle icon to open its patch list window.



The sound names window appears. Alternately, you can choose the patch list's name from the Windows menu to open its window.

Editing a patch list

Here is a summary of what you can do in the patch list:

To do this	Do this
Change the name of a sound	Click the patch name in the list that you wish to edit, enter a new name and press the Return key on your Mac keyboard to confirm the edit. The new name appears. If you press the Enter key instead of Return, the edit is confirmed and the next patch name is ready for editing. Similarly, you can move up and down between patch names with the up and down arrow keys.
	
To move a sound up or down in the list	Drag its handle
To sort the sounds alphabetically	Choose Sort by name from the mini-menu
To sort the sounds numerically	Choose Sort by number from the mini-menu
To change the numbering scheme	Choose <i>Set Numbering format</i> from the mini-menu. For more information, see "Setting the numbering format for a patch list" on page 743.
To create a custom numbering scheme	Choose <i>Show ASCII String</i> from the mini-menu. For more information, see "Creating a custom numbering format" on page 743.
To change the overall number of sounds	Same as above
To make the numbering start at 0 instead of 1 or vice versa	Same as above
To set up a bank select message for the list	See "Using multiple patch lists & bank select messages" on page 747
To change a sound's patch number	Click its current patch number

Setting the numbering format for a patch list

Most MIDI devices number the sounds in a bank using one of several common conventions. For your convenience, PatchList Manager lets you choose the numbering scheme that most closely matches the instrument. To set the numbering format, choose Set Numbering Format from the sound names window mini-menu or click in the *Length* column. Choose the appropriate options and click OK.

- You can always change the format, but you can't change the number of patches in the list after it has been assigned to a device MIDI channel. If you need to do so, you have to temporarily de-assign it, make the change, and then reassign it.

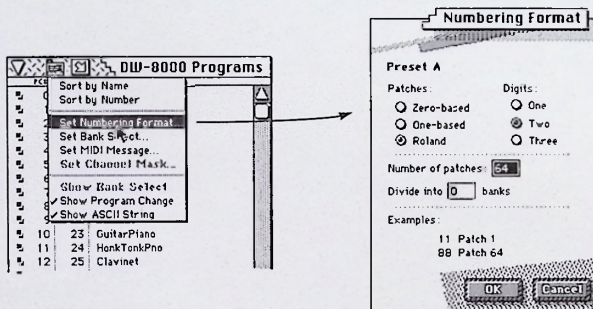


Figure 48-6: Setting the numbering format

Creating a custom numbering format

If your device has a specialized numbering scheme, use the *Show ASCII String* command in the mini-menu instead. This displays a column in the patch list in which you can type any number or text string next to each patch. This gives you complete flexibility in setting up the patch numbers. Use the *Show Program Change* and *Show ASCII String* commands to hide the program change column and display the ASCII numbers.

Sending a patch list back to a configured device after editing it

If the patch list you are editing is one that you loaded from a configured device using the Get Patch Dump command, making changes in the patch list may also change the patch dump, depending on the device. Check the device's Device Help (see "Getting device help" on page 733) to see what the patch dump actually contains (it varies by instrument). If the patch dump only contains the patch

Duplicating a patch list

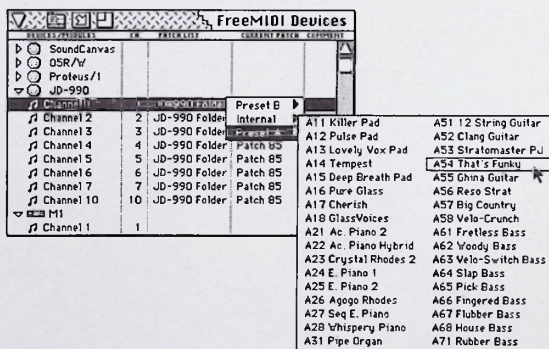
Grouping patch lists in a folder

names, then you can only change the names of the sounds when you send it back to the instrument. If the patch dump is a complete bulk dump of the whole instrument, you may be able to control other aspects of the bank. Device Help will give you specific advice for your instrument.

At times, you may need to duplicate a patch list to make a separate copy of it. For example, you may want to place the list in more than one folder. To duplicate a patch list:

1. Click the patch list move handle to select it.
2. Choose Duplicate from the Patch Lists menu.

A patch list folder allows you to group several patch lists together. You can then assign the folder to a MIDI channel, which makes all of the lists available to it. The resulting pop-up patch list for the MIDI channel is hierarchical and shows each patch list as shown below.



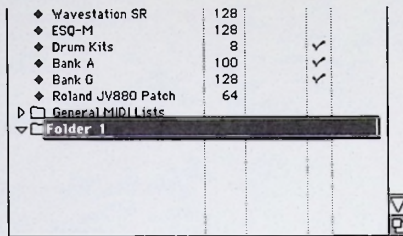
Folders are ideal for handling devices that have multiple banks, and therefore multiple patch lists. For more information about multiple banks, see "Using multiple patch lists & bank select messages" on page 747.

To group patch lists in a folder:

1. Choose Add Folder from the Patch Lists window mini-menu.

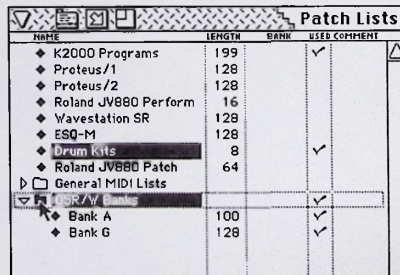
The folder appears at the bottom of the list.

2. Click its name to rename it.



3. Drag each list on top of the new folder by dragging the diamond list icon.

Once inside the folder, the lists are indented to the right to indicate that they are inside the folder, just like the System 7 Finder. Use the show triangle to show or hide the patch lists in the folder. You can put as many patch lists as you like in the folder. You can use this feature to help organize patches.



4. Assign the folder to the device it is intended for.

See "Getting patch lists to appear in Performer" on page 740 for information about how to do this.

5. (Optional) If you want a particular bank in the folder to appear on only certain MIDI channels for the device, use the Set Channel Mask command in the patch list's mini-menu.

See the next section for more information.

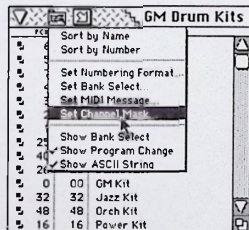
Making a patch list appear on only certain MIDI channels

When you place multiple patch lists in a folder and then assign the folder to the entire device as described in "Getting patch lists to appear in Performer" on page 740, all of the patch lists in the folder will appear on all the device's MIDI channels. In some cases, however, you may want to limit the channels on which a particular patch list appears. For example, if your MIDI instrument only plays drum kits on channel 10, you'd want the drum kit patch list to appear on channel 10 only, and you'd want all of the other patch lists to appear on channels 1-9 and 11-16. To do so, you can set the *channel mask* for each patch list in a folder. The channel mask lets you choose which channels the patch list will appear on. This can only be done on patch lists that currently reside inside a folder.

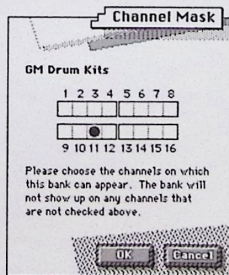
To set the channel mask for a patch list:

1. Open the patch list by double-clicking its diamond move handle in the Patch Lists window.
2. Choose Set Channel Mask from the mini-menu.

If this command is grayed out, the patch list is not in a folder yet.



3. Click the channels as necessary so that the channels on which you want the list to appear have a black dot.



Using multiple patch lists & bank select messages

Determining your device's bank select implementation

Which banks can be accessed via bank select?

Does the device use one controller or two for the bank select message?

For devices that support MIDI bank select messages, set up a folder containing one patch list for each bank. (See the earlier sections of this chapter to learn how to do this.)

Once you've arranged all the banks into a folder and assigned the folder to the MIDI channels for the device, all that is left to do is assign the appropriate bank select number to each patch list.

Once you've set up a device in FreeMIDI for bank select, you need to find out is how your MIDI device handles bank selection. This can get a little tricky. All MIDI devices that support bank select do so a little differently. And often you'll have to wade through the MIDI implementation charts in the back of the manual.

The following sections tell you what you should find out about your synth.

The most important thing to know about a bank is: can it be called up with a bank select message and can items within the bank be called up with a MIDI program change event?

Try to get a feel for what the banks are. Some banks are not actually sounds. Instead, they consist of internal configurations for the synth, such as multi-timbral setups (like Yamaha and Korg *multis*) or multiple layers of sounds (such as *combis*). Some banks represent a card slot and are therefore only available when a card is present. Banks can be designated as General MIDI, which means that they contain a standard set of sounds or drum kits. Some banks are drum kits only and may only be available on certain MIDI channels (usually channel 10).

Some devices use a single MIDI controller, either #0 or #32. Others use both.

What is the controller value for each bank?

MIDI controllers have a number that identifies them (such as #32), but they also have a *value* between 0 and 127. The controller *number* identifies the controller as a bank select message, and its *value* calls up a specific bank. Here's an example:

Bank:	Controller used to call it up:
Bank A	Controller #32, value 0
Bank B	Controller #32, value 1
Bank C	Controller #32, value 2

If your device uses both controller #0 and #32, be sure to obtain the value for both for each bank.

The fun part about this is that often the device's manual gives you this information in *hexadecimal* form. Don't worry. PatchList Manager lets you use the hexadecimal numbers without even knowing what they are.

Once you are armed with the information above, you are ready to proceed.

Setting up bank select devices in FreeMIDI

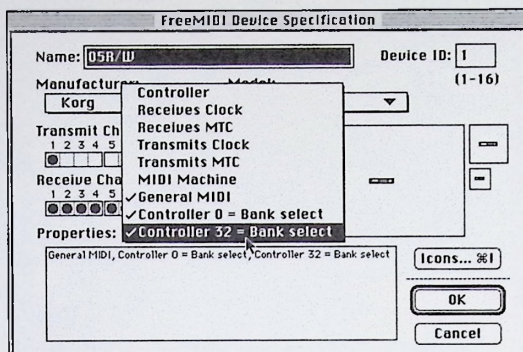
To use bank select messages with a MIDI device, you first need to tell FreeMIDI which MIDI controller the device uses for bank select:

1. Open FreeMIDI Setup.

If you are running Performer or PatchList Manager, choose Edit FreeMIDI Configuration from the Basics menu or MIDI menu, respectively. If are running neither, double-click the FreeMIDI Setup program in the FreeMIDI applications folder on your hard disk.

2. Double-click the icon for a MIDI device that supports bank select.

The Device Specification window appears.



3. Choose the appropriate bank select device properties from the Properties pop-up menu.

If the synth uses both controllers for bank select, choose both bank select properties. See “Determining your device’s bank select implementation” on page 747 if you need help with this step.

4. Click OK to confirm your choice.
5. Repeat this procedure for each device in your FreeMIDI setup that uses bank select.

Assigning a bank select number to a patch list

Now you are ready to assign the bank select controllers to each patch list:

1. Places all of the patch lists together in a folder.

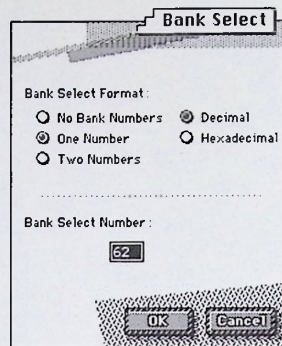
See “Grouping patch lists in a folder” on page 744.

2. Click in the Bank column to the right of the Patch List name.

The Bank Select dialog box appears.

3. Choose the necessary number format, and type in the correct bank select number or numbers.

If the bank number information you got from the device’s manual is in hexadecimal format, you’ll need to choose the Hexadecimal option. Otherwise, use decimal format.



4. Click OK when you are done.
5. Repeat this procedure for each bank.
6. Assign the folder to the MIDI channels for the device.

See "Getting patch lists to appear in Performer" on page 740.

What to do if bank select doesn't work

Once bank select messages are assigned as described in the previous section, you can choose any patch from the pop-up patch lists in Performer, PatchList Manager, and FreeMIDI setup, and doing so should call up the correct sound from the correct bank.

If it doesn't, check to make sure that the device has been given the proper Bank Select device property in your FreeMIDI setup. To do so, choose Edit *FreeMIDI Configuration* from the MIDI menu.

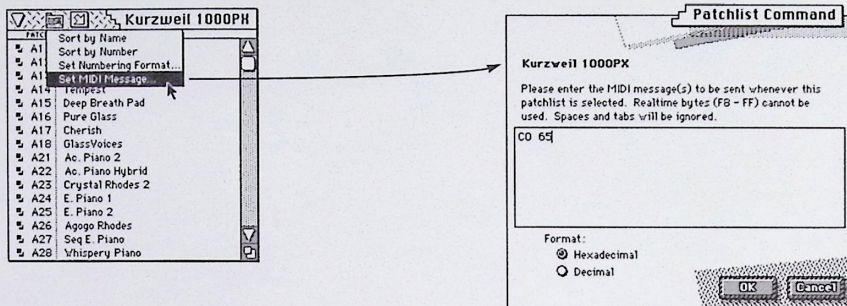
Next, check the synth. Sometimes they have a mode that makes them ignore bank select or program changes. Still no response? Then the controller information you have is probably incorrect, or perhaps the instrument still isn't in the correct mode. Or the actual MIDI connections between FreeMIDI and the synth are somehow not working correctly.

Assigning additional MIDI messages to a bank

Some devices don't use controller #0 or #32 for bank select and use another type of MIDI message instead. For these devices, you can type in any MIDI message the device calls for. This includes system exclusive data, a MIDI program change event with certain value, or any other type of event.

To assign a MIDI message to a patch list:

1. Open the patch list by double-clicking its icon in the Patch Lists window.
2. Choose Set MIDI Message from the mini-menu, or click in the "CM?" column in the Patch Lists window next to the patch list.



3. Choose the desired number format (either decimal or hexadecimal) and type in the MIDI message.
4. Click OK when you are done.

Now, the MIDI message you entered will be automatically sent whenever necessary to call up the bank (such as at the beginning of a session or when you change banks).

When you are done setting up your patch lists, you need to save your work:

1. Choose Save from the File menu.
2. Type in a name for the patch list file.
3. Click Save.

PatchList Manager then saves the entire contents of the FreeMIDI Devices and Patch Lists windows in a file on your hard disk. In addition, PatchList Manager tries its best to stay in sync with the FreeMIDI devices in your current FreeMIDI Configuration. Each PatchList Manager document is associated with a specific FreeMIDI

Saving your patch lists

Hot tips

Splitting up a patch list into instrument categories

Configuration. If you change FreeMIDI Configurations, PatchList Manager will close the current file and open the file associated with the new, current FreeMIDI Configuration. If you change back to a FreeMIDI Configuration, PatchList Manager will automatically use the corresponding PatchList Manager file.

Here are some things you can do with PatchList Manager.

PatchList Manager allows you to organize the sounds in an device into instrument categories as shown below in Figure 48-8. To do so, you will make one copy of the patch list for each category. In the list, you'll move the patches that you want to appear in the category to the top of the list, and then hide the rest. Finally, you'll group the lists into a folder and give them an appropriate name for each category.

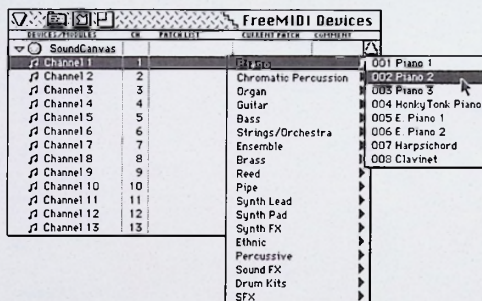


Figure 48-7: Patch lists that have been organized into instrument categories

To split up a patch list into instrument categories:

1. **Duplicate the original patch list.**

For information on duplicating a patch list, see “Duplicating a patch list” on page 744.

2. **Rename the duplicate list with the category name, such as *Pianos* or *Basses*.**

Click the name of the patch list in the Patch Lists window to pop-edit the name.

3. Double-click the move handle of the list to open it.
4. Drag the sounds that belong to that category to the top of the list.

A short cut for this is to type in a space at the beginning of the name of each sound and then choose Sort by name from the mini-menu. When you are done, you can remove the spaces.

5. Count the number of patches that are now at the top of the list that you want to include in the category.
6. Choose Set Numbering Format from the patch list mini-menu and type in the number of patches you just counted.

The list now displays only the patches you chose for the category.

7. Repeat this procedure, starting at step 1, for each category you would like to create.
8. After you have created a separate patch list for each category as described in this procedure, place them together in a folder.

See "Grouping patch lists in a folder" on page 744.

Getting back the factory default patch Lists provided by FreeMIDI

There may be times when, after assigning your own patch list (or folder) to a device, you want to return to the factory default patch lists that were originally provided for the device by FreeMIDI. To restore the factory default patch lists, choose None from the Patch List column next to the device name in the Devices window as shown below.

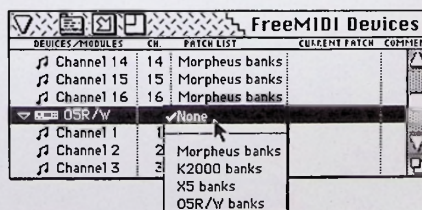


Figure 48-8: Restoring FreeMIDI's original factory default patch lists for a device

Duplicating MIDI channels in a device

In PatchList Manager, the MIDI channels listed below a device are called *modules*. Modules are added to Devices automatically by PatchList Manager. The number of modules added and their MIDI channel assignments are based on the number of MIDI receive channels specified for the device in FreeMIDI Setup.

There is rarely a need to do so, but you can add, edit, and delete modules for a device.

To add modules:

1. In the FreeMIDI Devices window, select a device to which you wish to add a module.
2. Choose *Create Module* from the mini-menu.

The new module appears at the bottom of the selected devices module list.

3. [Optional] Assign a MIDI channel for the module by selecting it from the pop-up menu in the CH column.
4. [Optional] Enter a name for the module by clicking its name and then typing.

To delete a single module:

1. In the FreeMIDI Devices window, select the module you wish to delete.

Shift-click modules to select more than one.

2. Choose *Delete Module* from the mini-menu.

To delete all modules for a device:

1. Select the device itself (not one of its modules).
2. Choose *Delete Module* from the mini-menu.

Chapter 49 *Editing FreeMIDI Device Files*

Working with FreeMIDI Icons

Adding or Replacing Icons to FreeMIDI

This chapter explains how to:

- Edit the icons that FreeMIDI uses to display devices in the FreeMIDI Configuration window.
- Add devices to the FreeMIDI Devices file so that MIDI devices that are in your studio but not already defined in the current version of FreeMIDI will appear in the manufacturer and model name pop-up menus in places such as the Quick Setup dialog box and the FreeMIDI Device Specification dialog box.

You can add, delete, and edit icons that ship with FreeMIDI so that you can customize the look of your FreeMIDI configurations.

To add icons to FreeMIDI's icon list:

- 1. Copy the icon you wish to add from your icon editor to the Clipboard, so that it will be ready to paste.**

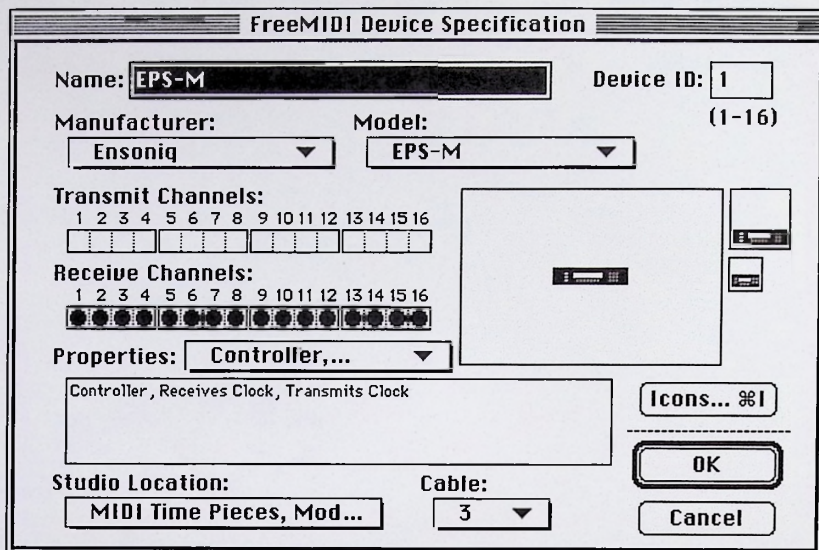
When you create an icon, note that there are actually three sizes for the display in FreeMIDI: small, medium, and large. If you make an icon for each size, you'll need to paste in the three icons one at a time using this procedure.

- 2. If you have not done so already, open FreeMIDI Setup by double-clicking its icon in the Finder. Alternately, you can open FreeMIDI Setup by choosing the *Edit FreeMIDI Configuration* command in any other FreeMIDI application.**

The FreeMIDI Configuration window will open displaying the current FreeMIDI configuration.

3. Choose *Create Device* from the Configuration menu or type command-K on your Mac keyboard.

The FreeMIDI Device Specification dialog box appears.



The dialog box is titled "FreeMIDI Device Specification". It contains the following fields and controls:

- Name:** A text field containing "EPS-M".
- Device ID:** A text field containing "1".
- Manufacturer:** A dropdown menu showing "Ensoniq".
- Model:** A dropdown menu showing "EPS-M".
- Transmit Channels:** A row of 16 checkboxes, numbered 1 to 16. All are currently unchecked.
- Receive Channels:** A row of 16 checkboxes, numbered 1 to 16. All are currently checked.
- Properties:** A dropdown menu showing "Controller,...". Below it is a text area containing "Controller, Receives Clock, Transmits Clock".
- Icons...** A button with a small icon next to it.
- Studio Location:** A text field containing "MIDI Time Pieces, Mod...".
- Cable:** A dropdown menu showing "3".
- OK** and **Cancel** buttons.

Figure 49-1: FreeMIDI Device Specification Dialog Box

4. Click *Icons* or type command-I on your Mac keyboard.

The Device Icons dialog box appears.

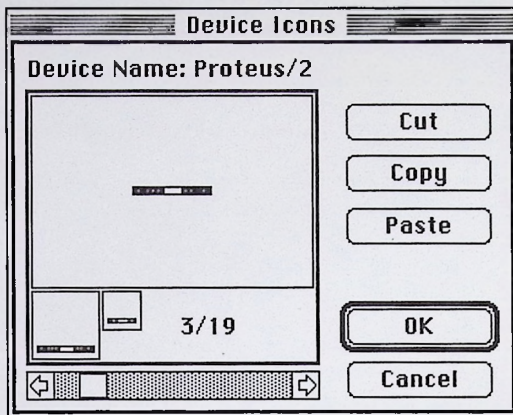


Figure 49-2: Icons Dialog Box

5. If you want to replace an existing icon, scroll to it now.
6. Click one of the three boxes shown to select the size of the icon that you are pasting.

FreeMIDI has three possible sizes at which it can display the device icon. Each size is shown in the boxes. Click the box into which you want to paste.

7. Click **Paste** to paste the icon from the Clipboard into FreeMIDI's icon set.

If there is an icon currently selected, you are asked whether you want to replace the current icon or create a new icon.

8. If you want to add a new icon, choose the create option and the new icon options.

The icon is added to FreeMIDI's icon set and you can assign it to any FreeMIDI device.

9. **If you want to replace the existing icon, choose the replace option.**

The icon replaces the currently selected icon. For more information, see "Editing FreeMIDI Devices" on page 693.

10. **Click OK to close the Icons dialog box.**

The FreeMIDI Device Specification dialog box reappears.

11. **Click Cancel to close the FreeMIDI Device Specification dialog box.**

If you do not cancel the FreeMIDI Device Specification dialog box, you are adding a FreeMIDI device to your FreeMIDI configuration.

Deleting FreeMIDI Icons

To delete icons from FreeMIDI's icon set:

1. **If you have not done so already, open FreeMIDI Setup by double-clicking its icon in the Finder. Alternately, you can open FreeMIDI setup by choosing the Edit FreeMIDI Configuration command in any other FreeMIDI application.**

The FreeMIDI Configuration Window opens displaying the current FreeMIDI configuration.

2. **Choose Create Device from the Configuration menu or type command-K on your Mac keyboard.**

The FreeMIDI Device Specification dialog box appears as shown in Figure 49-1 on page 756.

3. **Click Icons or type command-I on your Mac keyboard.**

The Icons dialog box appears as shown in Figure 49-1 on page 756.

4. **Use the horizontal scroll bar and arrows to scroll the FreeMIDI icon list until you see the icon you wish to delete in the center panel.**

Alternately, you can click icons to the left or right of the center panel and they will be scrolled to the center panel.

5. **Click Cut.**

Since this operation cannot be undone, you are asked to confirm this deletion.

Editing FreeMIDI Icons

6. Click OK to close the Icons dialog box.

The FreeMIDI Device Specification dialog box reappears.

7. Click Cancel to close the FreeMIDI Device Specification dialog box.

If you do not cancel the FreeMIDI Device Specification dialog box, you are adding a FreeMIDI Device to your FreeMIDI Configuration.

To edit icons in FreeMIDI's icon set:

1. If you have not done so already, open FreeMIDI Setup by double-clicking its icon in the Finder. Alternately, you can open FreeMIDI setup by choosing the *Edit FreeMIDI Configuration* command in any other FreeMIDI application.

The FreeMIDI Configuration window opens displaying the current FreeMIDI configuration.

2. Choose *Create Device* from the Configuration menu or type command-K on your Mac keyboard.

The FreeMIDI Device Specification dialog box appears as shown in Figure 49-1 on page 756.

3. Click Icons or type command-I on your Mac keyboard.

The Icons dialog box appears as shown in Figure 49-1 on page 756.

4. Use the horizontal scroll bar and arrows to scroll the FreeMIDI icon list until you see the icon you wish to edit in the center panel.

Alternately, you can click icons to the left or right of the center panel and they will be scrolled to the center panel.

5. Click Copy to copy the icon to the Clipboard.
6. Click OK to close the Icons dialog box.
7. Click Cancel to close the FreeMIDI Device Specification dialog box.
8. Launch your icon editing program and paste the icon into your editing program.

9. Make the icon look the way that you want and then copy it back to the Clipboard.

10. Choose *Create Device* from the Configuration menu or type command-K on your Mac keyboard.

The FreeMIDI Device Specification dialog box appears.

11. Click *Icons* or type command-I on your Mac keyboard.

The Icons dialog box appears.

12. Click Paste to paste the icon from the Clipboard into FreeMIDI's icon set.

You are asked whether you want to replace the current icon or create a new icon. The new icon is added to FreeMIDI's icon set and you can assign it to any FreeMIDI device. For more information, see "Editing FreeMIDI Devices" on page 693.

13. Click OK to close the Icons dialog box.

The FreeMIDI Device Specification dialog box reappears.

14. Click Cancel to close the FreeMIDI Device Specification dialog box.

If you do not cancel the FreeMIDI Device Specification dialog box, you are adding a FreeMIDI device to your FreeMIDI configuration.

Icons are stored in a file called FreeMIDI Icons, which is located in the FreeMIDI Folder in the System Folder. If you create your own icons and paste them into FreeMIDI as described in this chapter, make a copy of the FreeMIDI Icons file as a backup copy so you don't lose your work.

Edit the text within the FreeMIDI Devices text file so that FreeMIDI can have more information about various MIDI devices than the information that was shipped with your version.

Preserving Your Custom Icons

Editing Text File

To edit the text in the FreeMIDI Devices file:

1. Open your text editor application.

You can use any text editor which can save files in a "text only" format. Even the TeachText application from Apple will work.

2. Open the FreeMIDI Devices file.

This file is found within the FreeMIDI Folder that is located inside your System Folder.

3. Enter the information that you wish to add.

The file contains a description of the data format that is required by FreeMIDI. Enter the information about devices following this format. If you do not understand this format by reading these descriptions, we suggest that you have someone else do this type of editing for you.

4. Save the file in the "text only" format.

TeachText does this automatically.

5. The next time you open FreeMIDI Setup your changes appear in the various pop-up menus.

MIDI Beat Clocks

Technical Specification

This appendix describes the synchronization formats supported by Performer.

MIDI beat clocks (also called MIDI clock) are a standard form of synchronization which may be transmitted between two MIDI devices. Using MIDI beat clocks requires no synchronization code conversion box; the signals are simply carried on a MIDI cable along with other MIDI information. To synchronize MIDI beat clocks to other forms of sync code, such as FSK or SMPTE time code, you must use a converter which translates from the audio code to MIDI beat clocks.

MIDI beat clock synchronization consists of five different MIDI messages: *start*, *timing clock*, *stop*, *continue*, and *song position*. These messages are transmitted from the MIDI Out of the master to the MIDI In of the slave.

Start signals the slave to prepare to begin playback from the beginning of the sequence. Playback does not actually begin until a timing clock is received.

Timing clocks are sent 24 times per quarter note. These keep the slave locked to the master. Because the signals are based on the quarter note, the master controls tempos.

Stop signals the slave to stop playback.

Continue resumes playback. If the last signal was a stop, the first timing clock following the continue message is the one which follows the last timing clock sent before the stop. Thus, it is as if the stop and continue messages never happened, and the timing clocks had just kept on going. However, if the last message was a song position, the first timing clock following the continue message is the timing clock specified by the song position message.

Variations in MIDI Implementation

Song position signals the slave to rewind to a specified position, and prepare to resume playback. The position is specified in multiples of 6 timing clocks (sixteenth notes). The position value is only 14 bits long. In 4/4 time, this limits the range to 1024 measures.

Some MIDI equipment only implements part of the MIDI clock synchronization specification. This can cause confusion when used with Performer, which implements the full specification.

Timing clocks only. Some equipment only sends and receives timing clocks. When slaving such a device to Performer, you must rewind the device manually. Since there is no positioning control, Performer will begin at the current Counter location, and the device will begin playing wherever it is located. You must make sure the two positions match manually.

When slaving Performer to this type of device, you must set the *Start on any clock* option in the Receive Sync dialog box. As above, you must make sure that both the device and Performer are positioned to the same location before starting the device.

Start/stop (and timing clocks) only. The device can only begin playback from the beginning of its sequence. Performer will slave to such a device without problems. If you slave the device to Performer, it will only start playing if you start at the beginning of the Performer sequence. Note that some devices do not send a continue command via MIDI, even if they have an internal continue feature.

Start/stop/continue (and timing clocks) only (no song position). Performer slaves properly to such a device. When slaving the device to Performer, you must be careful when rewinding Performer:

If you stop Performer and then start again without rewinding, the master and the slave will remain in sync.

If you stop Performer, cue in either direction, and start again, Performer will begin at the location you moved to but the slave device will begin where it had last stopped. No song position command is passed, and the two will no longer be in sync.

Direct Time Lock (Enhanced)

Technical Specification



If you rewind to the beginning of the sequence and start Performer again, Performer will send a start command. The slave will respond to this and start correctly at the beginning of the sequence, and master and slave will remain in proper synchronization.

Enhanced Direct Time Lock (DTLe) is a synchronization standard which allows Performer to easily lock to SMPTE or other time code through a converter supporting this standard, such as Mark of the Unicorn's MIDI Time Piece™. What follows is a detailed technical specification of the standard and its implementation in Performer. This specification is a revision of the original Direct Time Lock specification released in June, 1987.

There are two messages associated with direct time lock: *full frame* and *frame advance*. The *full frame message* should be sent when the time code source (such as a tape machine) is started and the converter first achieves lock, followed by a full frame message once per second while the converter maintains lock. The message is implemented as a system exclusive message. The data specifies the full frame in hours, minutes, seconds, frames.

<full frame> ::=			
<F0H>	<00H>	<33H>	(Manufacturer's ID)
		<7FH>	(Universal real time message)
		<0CH>	(DTL full frame message ID)
		<0nH>	(MTP network specifier) n = 0 specifies Box 1-8 n = 8 specifies Box 9-16
		<0ffhhhhB>	(ff specifies SMPTE time-code frame rate, and hhhh specifies the hour from 0 to 23.) ff = 00 specifies 24 fps ff = 01 specifies 25 fps ff = 10 specifies 30 drop ff = 11 specifies 30 non-drop
		<mmH>	(Specifies minutes from 0 to 59)
		<ssH>	((Specifies seconds from 0 to 59)
		<ffH>	(Specifies frames from 0 to 29)
		<F7H>	(End of message)

The full frame message is a starting reference for the frame advance messages; it need not be sent in synchronization with anything. A converter may wish to send the message a few frames before the specified frame is reached.

The frame advance message is sent four times each frame. The first frame advance sent after a full frame message corresponds to the beginning of the frame specified in the full frame message. Successive frame advances correspond to successive frames.

<frame advance> ::= <F8H>

Performer's Direct Time Lock Implementation

The frame advance message is the same as the standard MIDI clock message used in normal MIDI sync. This message is a real time message as defined by MIDI, and may be inserted in the middle of a normal MIDI message for minimum timing delay.

While the tape is running, the converter should send a tape position message once per second. These messages should be sent between frame advances. As with the initial full frame message, the frame advance following the full frame message corresponds to the beginning of the frame specified in the full frame message.

Sending periodic full frame messages allows slave devices to come on line at any time and sync up to the master. Periodic full frame messages also ensure that any slippage due to data loss over the MIDI line is corrected.

If Direct lock mode and Slave to External Sync are selected and the Play button is grey, Performer waits for a full frame message. When one is received, the sequence is rewound to that point and playback is readied. When frame advances are received, Performer advances in sync with the frame messages, playing the sequence. This continues until one of two things happens.

If more than 8 frames of time pass without a frame advance message, Performer assumes playback has been stopped. The sequence is stopped (notes are turned off), and Performer begins looking for a full frame message again.

When another full frame message is received, Performer compares the position in the message to the current playback position. If they are the same, Performer does nothing. Otherwise, Performer makes whatever adjustment is needed. If the full frame message is not close to the current location, Performer immediately stops playback and rewinds to the new location. Playback is then readied at the new location, and frame advances are looked for.

If you are designing a converter, you should be aware of the automatic time out. If your converter has the capability to sync to slow tape motions (tape rocking), it should send full frame messages only without frame advances when doing so. It is also not recommended that you send frame advances at high speed when the

tape is cueing rapidly. It's better to stop sending frame advances, and then send a new full frame command when the tape returns to normal playback speed.

If the tape is being rewound, the converter should stop sending messages and wait until the tape is moved forward again. At that point the first full frame message should be sent.

Appendix B *Troubleshooting and Customer Support*

Preventing Catastrophe

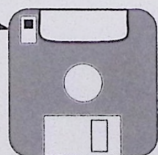
*Keep up-to-date backups of your sequences as you work, so that you always have copies of the most recent work you have done. Almost any software problem is survivable as long as you have kept backups of your work. Refer to *Helpful File and Disk Hints* in the chapter *Working With Files* for detailed suggestions about file management.*

Keep plenty of free space (20K or more) on any disk containing sequences which you are actually working on. This will prevent the Macintosh from attempting to save your file onto a disk that doesn't have enough space for the whole file. Running out of disk space while saving can result in an unreadable and irretrievable sequence.

Keep track of your RAM (Random Access Memory) usage with the Memory Window, and save often. Recording and editing both use a great deal of RAM. Also watch the Message Center — it will sometimes warn you that a recording pass or a requested edit operation requires more memory than is available. In this situation, try recording or editing the region in smaller sections; for example, transpose a 20-track, 200-measure sequence 5 tracks at a time.

Keep your Mark of the Unicorn master disks locked (write-protected) at all times by sliding the tab on the back of the disk open so that light can be seen through the rectangular aperture. We recommend that you use the master disks only as resources from which you can make working copies, and as key disks with which to start the program when you begin a session. Should your copies become damaged, you will always be able to go back to the master disk for fresh working copies.

Write-protected (Hole is open)



Troubleshooting

Troubleshooting is always simplest and most effective when the exact problem can be specified clearly and concisely. If you are surprised by an error message or by seemingly erratic behavior in the program, take a moment to jot down the relevant details: exactly what the error message said (including any error ID numbers), what actions were done on-screen just before the problem occurred, what kind of file you were working with, how you recovered from the problem, and

any unusual conditions applying during the occurrence of the problem. This may not enable you to solve the problem at once, but will greatly aid in isolating the problem should it reoccur.

If the problem you are encountering seems inconsistent, try to determine what the necessary pattern of actions are that will cause it to occur. Genuine bugs in application software like Performer are almost always consistent in their manifestation: the same set of actions under the same conditions invariably brings about the same results. Determining the exact cause of a bug often requires experiments which replicate the problem situation with one factor changed: starting the program from a different disk drive, restarting the Macintosh with a system folder containing different versions of the System File and the Finder, working with a new sequence instead of an existing one, etc.

If the problem is truly inconsistent, then it is likely to be a hardware problem: improper disk drive alignment, a loose connection, overlong cables, signal 'aliasing', etc. For example, if you play a sequence several times consecutively from 111000 without making any changes to it, and on one pass you hear a wrong note at 311043, and on another pass you hear a different wrong note at 6121332, and the other times it plays back without any errors, the problem is almost certainly external to Performer. At this point you will want to experiment with changes in your hardware configuration (where possible) to attempt to isolate the source of the problem.

The most important tools for tracking down problems are the MIDI Monitor window and the Event List windows. The MIDI Monitor window indicates the type and channel assignments of all MIDI data being sent to Performer. If there is a hardware problem, or if your channel assignments are wrong, the problem should be apparent in the MIDI Monitor window.

On the other hand, the Event List windows show all the MIDI data being sent **from** Performer. If you're hearing something unusual in your sequence, the first thing to do is to bring up the Event List windows for the tracks in question. Go to the points in the track at which you are hearing the discrepancy and look for events that may correspond to what you are hearing. Use the View Filter if necessary to clearly isolate the events you are interested in. If the problem is visible in the event list, you can erase or edit the events in question.

If an audible problem does not correspond to anything in the event list, its cause is likely to be something external to Performer: the Macintosh, interface, cables, instruments, or other equipment.

If the Counter, Click, or Flash move irregularly, or if playback is erratic or seems to stall and skip: the problem may be a "MIDI logjam", in which the Macintosh is asked to process too much MIDI information too quickly. This is not a serious problem if the actual playback timing is not affected; Performer gives priority to sending and receiving MIDI data over most screen redisplay. However, with enough of an overload you may hear delays or erratic timing in your music.

Usually the overload is caused by vast reams of aftertouch (mono or poly key pressure), controller, or pitch bend events in one or more synthesizer tracks. Open Event List windows for the tracks in question and look for large amounts of data of this type.

To solve the problem, you must reduce the amount of MIDI information being passed through the modem and/or printer port in the following ways:

- Slow down the tempo of the sequence during the problem passages.
- Delete a track or tracks from the sequence.
- Turn off the play-enable buttons for one or more tracks. When you do this, Performer completely ignores these tracks, letting it concentrate all of the computer's processing power on playing one part. Do not use the Solo button instead; if you do, Performer will scan the other parts while playing and the problem will remain.
- Use the Edit Filter and the Cut or Erase commands to remove some data from one or more of the tracks. See the *Edit Commands* chapter for help with this. Remember to set the Edit Filter back to its default setting before going on with your work.
- Use the Thin Continuous Data command to reduce the amount of continuous data in one or more tracks. This command preserves the original contour and basic effect of the controllers you are editing, while thinning out unnecessary information.

- Reassign some of the tracks to be output through the other serial port. There is a limit on the amount of information which can be passed through each port individually; balancing your output through both ports can eliminate the overload.

If Performer starts correctly, but you are unable to record (or play)

anything: double-check your cable connections and synthesizer settings. Check the MIDI interface dialog box, and be sure you have chosen to receive data at the correct frequency through the correct serial port (modem and/or printer) on the back of the Macintosh. Often only A/B tests will reveal the source of the problem. It may be necessary to switch your MIDI cables, and if possible, to try using a different MIDI interface or synthesizer for input/output. The easiest way to test if MIDI data is actually getting to Performer is to open the MIDI Monitor window. Make sure that any recording channel assignments in the Tracks window and Input Filter correspond to the MIDI channels set in the controlling keyboard or device.

If you cannot open a particular file: first try opening other existing files, or a new file, to be sure Performer is working at all. Refer also to the list of disk and file errors in the chapter *Working with Files*. If a file is opened and seems damaged, will not let you save changes, etc., you still may be able to save some or all of its musical information by using the Clipboard to copy the tracks and paste them into another file on another disk.

If Performer will not start up at all, or always brings up an irregular or damaged file when the Performer icon is opened from the Finder, your working copy may be damaged. Make a fresh working copy from one of your master disks. To be thorough, make this new working copy by dragging the Performer program icon from another master disk (i.e. not from the key disk from which the original working copy was made). Restart the Macintosh and try opening another (new or existing) file with your new working copy to see if you have the same problem. Check also to see if other applications (Professional Composer, MacWrite, MacPaint, etc.) are working properly.

If one of your key disks becomes damaged and fails to work as a key, our Customer Support Department will be glad to replace it. See the *Customer Support* section below for more information.

Disk Repairs

Customer Support

If you're having problems synchronizing Performer with other equipment: refer carefully to the chapter called *Receive Sync* and the section called *Variations in MIDI Implementation* in Appendix A. Remember that Performer inputs and outputs only MIDI, and that the MIDI beat clock specification consists of only five different types of messages. Try to deduce exactly which signal(s) are not being sent or are being misinterpreted by which piece(s) of equipment. The MIDI Monitor window is helpful in determining if timing information is being sent: the RT (real time) indicator will highlight for the port(s) receiving beat clocks or other timing data.

We are glad to replace damaged disks belonging to registered users. Please contact Mark of the Unicorn Technical support by phone, fax, or letter if your disk needs to be repaired or replaced. Our Technical support phone number is: (617) 576-3066. Fax: (617) 576-3609.

We are happy to provide customer support to our registered users. If you haven't already done so, please take a moment to complete the registration card in the front of the manual and send it in to us. When we receive your card, you'll be placed on our mailing list and sent a free backup key disk.

Registered users who are unable, with their dealer's help, to solve problems they are encountering with Performer may call our technical support line. The number is (617) 576-3066, and is staffed Monday through Friday 9 AM to 8 PM, Eastern Time. If you decide to call, please have your Performer manual at hand, and be prepared to provide the following information to help us solve your problem as quickly as possible:

- **The serial number of the program.** This is printed on the cardboard page (at the front of the manual) which holds the registration card. Be sure to retain this page in the manual for your reference. You **must** be able to supply this number to receive technical support.
- **The version of Performer you are working with.** This is displayed briefly in the start-up screen when Performer is started; it is also available through the *About Performer* command on the Apple menu from within Performer.

- **A brief explanation of the problem**, including the exact sequence of actions which cause it, and the contents of any error messages which appear on the screen. It is often very helpful to have brief written notes to refer to.
- **The pages in the manual** which refer to the parts of the program which you are having trouble with.
- **The version or creation date of the system software you are using to run the Macintosh**. See the Installation Guide for help in finding version numbers for the system software.

We're not able to solve every problem immediately, but a quick call to us may yield a suggestion for a problem which you might otherwise spend hours trying to track down.

Our technical support telephone line is dedicated to helping registered users solve their problems quickly. In the past, many people have also taken the time to write to us with their comments, criticism and suggestions for improved versions of our software. We thank them; many of those ideas have been addressed in this version of Performer. If you have features or ideas you would like to see implemented in our music software, we'd like to hear from you. Please write to the Performer Development Team, Mark of the Unicorn Inc., 1280 Massachusetts Avenue, Cambridge, MA 02138.

Although we do not announce release dates and features of new versions of our software in advance, we will notify all registered users immediately by mail as soon as new releases become available. If you move from the address indicated on your registration card, please send us a note with your change of address so that we can keep you informed of future upgrades and releases.

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